SAF-RC-032 100-F Remaining Sites Burial Grounds Soil Full Protocol FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02

DE 07/65/05

COMMENTS:

SDG K0321

SAF-RC-032

Waste Site: 128-F-3



Date:

21 June 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Site 128-F-3

Subject: Volatile Organics - Data Package No. K0321-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0321 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

	Normale Date			la (war file) a Dia piece and the
J11VW0	4/11/06	Soil	С	VOAs by 8260B
J11VW0R	4/11/06	Soil	С	VOAs by 8260B*
J11VW1	4/11/06	Soil	С	VOAs by 8260B
J11VW1R	4/11/06	Soil	С	VOAs by 8260B*
J11VW2	4/11/06	Soil	C	VOAs by 8260B
J11VW3	4/11/06	Soil	C	VOAs by 8260B
J11VW4	4/11/06	Soil	С	VOAs by 8260B
J11VW4R	4/11/06	_Soil	С	VOAs by 8260B*
J11VW5	4/11/06	Soil	C	VOAs by 8260B
J11VW5R	4/11/06	Soil	С	VOAs by 8260B*
J11VW6	4/11/06	Soil	С	VOAs by 8260B
J11VW6R	4/11/06	Soil	C	VOAs by 8260B*

^{*-} Re-prepared and re-analyzed.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

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Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within 14 days of the date of sample collection. If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the methylene chloride results in all samples were qualified as undetected and flagged "U".

Due to method blank contamination, the chloroform results in all samples were qualified as undetected and flagged "U".

Due to method blank contamination, the acetone results in samples J11VW2 and J11VW5R were raised to the RQL, qualified as undetected and flagged "U".

Due to method blank contamination, all detected 4-methyl-2-pentanone, 2-hexone, chlorobenzene, styrene and xylene results were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike/matrix spike duplicate analysis, all volatile organic results in samples J11VW5R and J11VW6R were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

Due to surrogate recoveries outside QC limits, all detected volatile organic results in sample J11VWOR were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

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Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike/matrix spike duplicate analysis, all volatile organic results in samples J11VW5R and J11VW6R were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J11VW0/J11VW1 and J11VW0R/J11VW1R) was submitted for analysis but both samples were re-prepared and re-analyzed and both sets were compared. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Seventy-seven analytes exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

Completeness

Data package No. K0321 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the methylene chloride results in all samples were qualified as undetected and flagged "U".
- Due to method blank contamination, the chloroform results in all samples were raised to the RQL, qualified as undetected and flagged "U".
- Due to method blank contamination, the acetone results in samples J11VW2 and J11VW5R were raised to the RQL, qualified as undetected and flagged "U".
- Due to method blank contamination, all detected 4-methyl-2-pentanone, 2hexone, chlorobenzene, styrene and xylene results were raised to the RQL, qualified as undetected and flagged "U".
- Due to the lack of a matrix spike/matrix spike duplicate analysis, all volatile organic results in samples J11VW5R and J11VW6R were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike/matrix spike duplicate analysis, all volatile organic results in samples J11VW5R and J11VW6R were qualified as estimates and flagged "J".
- Due to surrogate recoveries outside QC limits, all detected volatile organic results in samples J11VWOR were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Seventy-seven exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2 Summary of Data Qualification

VOLATILE ORGANIC DATA QUALIFICATION SUMMARY*

SBGs#63217		7.75	RAGELI DELL
COMMENTS:	de la companya de la		
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U	All	Blank contamination
Chloroform	U at RQL	All	Blank contamination
Acetone	U at RQL	J11VW2, J11VW5R	Blank contamination
4-Methyl-2-pentanone 2-Hexone Chlorobenzene Styrene Xylene	U at RQL	All detects	Blank contamination
All	†J	J11VW5R, J11VW6R	No MS/MSD
All detected results	J	J11VWOR	Surrogate recovery

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Laboratory: LLI Case: SDG: K0321 Sample Number J11VW0 J11VW0R J11VW1 J11VW1R J11VW2 J11VW3 J11VW4 Remarks Representation of the properties of	J11VW4R Reprep
Sample Number J11VW0 J11VW0R J11VW1 J11VW1R J11VW2 J11VW3 J11VW4	
Sample Date 4/11/06 4/11/06 4/11/06 4/11/06 4/11/06 4/11/06	4/11/06
Analysis Date 4/24/06 4/24/06 4/24/06 4/24/06 4/24/06 4/24/06 4/24/06	4/24/06
VOA RQL Result Q	Result Q
Chloromethane 10 11 U 11 U 11 U 11 U 10 U 11 U	11 U
Bromomethane 10 11 U 11 U 11 U 11 U 10 U 11 U	11 0
Vinyl Chloride 10 11 U 11 U 11 U 11 U 10 U 11 U	11 U
Chloroethane 10 11 U 11 U 11 U 11 U 10 U 11 U	11 U
Methylene Chloride	30 U
Acetone 10 11 U 11 U 11 U 10 U 10 U 11 U	11 U
Carbon Disulfide 10 6 U 6 U 6 U 6 U 6 U 5 U 6 U	6 U
1,1-Dichloroethene 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
1,1-Dichloroethane 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
1,2-Dichloroethene (total) 10 6 U 6 U 6 U 6 U 6 U	6 U
Chloroform 10 10 U	10 U
1,2-Dichloroethane 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
2-Butanone 10 11 U 11 U 11 U 11 U 11 U 10 U 11 U	11 0
10 6 U 6 U 6 U 6 U 6 U 6 U 6 U 6 U 6 U 6	6 U
Carbon Tetrachloride 10 6 U 6 U 6 U 6 U 6 U	6 U
Bromodichloromethane 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
1,2-Dichloropropane 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
cls-1,3-Dichloropropene 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
Trichloroethene	6 U
Dibromochloromethane 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
1,1,2-Trichloroethane 10 6 U 6 U 6 U 6 U 6 U 6 U 6 U	6 U
Benzene 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
trans-1,3-Dichloropropene 10 6 U 6 U 6 U 6 U 5 U 6 U	6 U
Bromoform 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
4-Methyl-2-pentanone 10 10 UJ 10 U 11 U 10 U 11 U 10 U 11 U	11 U
2-Hexanone 10 10 UJ 10 U 10 U 11 U 10 U 11 U	11 U
Tetrachloroethene 10 6 U 6 U 6 U 6 U 5 U 6 U	6 U
1,1,2,2-Tetrachloroethane 10 6 U 6 U 6 U 6 U 6 U	6 U
Toluene 10 6 U 6 U 6 U 6 U 6 U 6 U	6 U
Chlorobenzene 10 10 U	10 U
Ethylbenzene 10 6 U 2 J 6 U 6 U 5 U 6 U	6 0
Styrene 10 10 U 10 U 6 U 5 U 6 U	6 0
Xylene 10 10 U 10 U 6 U 10 U 6 U 5 U 6 U	6 0
cis-1,2-Dichloroethene 10 6 U 6 U 6 U 6 U 6 U	6 U
trans-1,2-Dichloroethene 10 6 U 6 U 6 U 6 U 5 U 6 U	6 U

Project: WASHINGTON CLO	SURE H	ANFORD		7													
Laboratory: LLI				1													
Case:	SDG: K	0321		1													
Sample Number		J11VW5	i .	J11VW5R		J11VW6		J11VW6R		Τ		T	_	Τ		-	
Remarks				Reprep		1		Reprep			_	 		<u> </u>		 	
Sample Date		4/11/06		4/11/06		4/11/06		4/11/06		 		 		†			
Analysis Date		4/24/06		4/25/06		4/24/06		4/24/06		 		 					
VOA	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	TQ	Result	Q
Chloromethane	10		U	11	UJ	11	U	11	UJ	<u> </u>	1		 	1	-	1	╅┺┈
Bromomethane	10		U	11	บป	11	U		UJ	<u> </u>		 			1-		+
Vinyl Chloride	10	11	U	11	UJ	11	U		UJ		1	 	╁┈	 	╆╌	†	+
Chloroethane	10	11	U	11	UJ	11	U		UJ	 	1	†	┿	 	╁─╌	-	1
Methylene Chloride	10	22	U	15	່ບັນ	22	Ū		ŪĴ	 	\vdash	 	\vdash		┼	 	+
Acetone	10	11	U		ŪĴ	11			UJ	 	 	 	╁		-	 	
Carbon Disulfide	10		Ìΰ		UJ	6			ÜJ	 	 	 	┼	 	┢	<u> </u>	+
1,1-Dichloroethene	10		Ū		UJ	6			UJ	 	\vdash		+	 	 	 -	╂━┩
1,1-Dichloroethane	10	6	Ū		UJ		U		UJ 03	 -	╫	 	 	 			┿╌┥
1,2-Dichloroethene (total)	10		Ū		<u>ui</u>		Ū		UJ		\vdash		\vdash		-	 	╂
Chloroform	10	10	lυ		ŰĴ	10	_		nn nn	 	├	 	 	 	├	 	┿┵
1.2-Dichloroethane	10		Ū		UJ		Ū		UJ			 	 	 	<u> </u>	 	+
2-Butanone	10		υ		UJ	11	-		UJ		├		┯	 	├	 	+
1,1,1-Trichloroethane	10		Ū		UJ		Ŭ		D)		\vdash		╁	╁┈──	⊢		+
Carbon Tetrachloride	10		Ū		UJ		Ü		23				 	 	├—	 	+-
Bromodichloromethane	10	6	1	6	UJ.		Ŭ		<u> </u>	-		 	┼──	<u> </u>	├		+
1,2-Dichloropropane	10	6			บัว		Ŭ		נט		-		╁	 	-		┼┤
cis-1,3-Dichloropropene	10		Ū		UJ		υ		IJ		 		 	-	 	 	╀
Trichloroethene	10		Ū		UJ		Ŭ		5		├─	<u></u>	├		├	<u> </u>	+
Dibromochloromethane	10		Ū	6	UJ		Ü		UJ O			 		 	 -		╀┈┤
1,1,2-Trichloroethane	10	6			IJ	$\overline{}$	Ŭ		UJ		├-		├				+
Benzene	10		Ū		נט		บ		UJ			-			├─-		┼┤
trans-1,3-Dichloropropene	10		Ū		נט		Ŭ		IJ				-	ļ <u> </u>		ļ	+
Bromoform	10		Ū		IJ		ŬΤ		UJ		_	-	├		ļ		+
4-Methyl-2-pentanone	10		Ü		Ü		Ŭ		ÜJ				┝	 			₩
2-Hexanone	10		Ü		UJ		Ŭ		nn nn				 				╃╌┤
Tetrachioroethene	10		Ŭ		UJ		ŬΗ		UJ			<u>. </u>	\vdash	ļ. 	 		+
1,1,2,2-Tetrachioroethane	10		Ü		UJ		Ŭ		ÜĴ								
Toluene	10		ŭ		UJ UJ		Ü		03	<u></u>						<u> </u>	+
Chlorobenzene	10		ŭ		Ü	10			03								┼─┤
Ethylbenzene	10		Ü		UJ		i l		UJ			<u>' </u>	H			 	+-
Styrene	10		Ü		UJ UJ		i l		UJ				-	-	<u> </u>		igoplus
Xylene	10		ŭ l		UJ	6 1	1		UJ U								
M&P Xylene	10		ΰl		ÜJ		 		UJ UJ								$\vdash \vdash$
O-Xylene	10		ŭ		ÜĴ		U		UJ U						-		₩
cis-1,2-Dichloroethene	10		ŭ l		UJ				UJ		-						
trans-1,2-Dichloroethene	10		ΰ		UJ	6 (6									\vdash
	10			0	00	0 [0	<u>- 1</u>	0	na T								

Volatiles by GC/MS, HSL List

Report Date: 04/28/06 12:13 Client: TNUHANFORD RC-032 K0321 Work Order: 11343606001 Page: la RFW Batch Number: 0604L780

	Cust ID:	J11VW0	J11VW0	J11VW1	J11VW1	J11VW2	J11VW2
Sample	RFW#:	001	001	002	002	003	003 MS
Information	Matrix:	SOIL	SCIL	SOIL .	SOIL	SOIL	SOIL
	D.F.:	0.980	0.962	0.962	0.980	0.980	0.980
	Units:	ug/Kg	.ug/Kg .	ug/Kg	ug/Kg	ug/Kg	ug/Kg
			REPREP		REPREP		
	Toluene-d8	133 %	146 * %	141 * %	165 * %	120 %	123
Surrogate Bromo	fluorobenzene	132 * %	142 * %	142 * %	155 * %	130 * %	121
Recovery 1,2-Dich	loroethane-d4	153 * %	174 * %	164 * %	182 * %	140 %	153 * 3
		======fl===	=====fl===	=====fl===	=====f1===	======fl====	
Chloromethane		11 U	11 U	11 U	11 U	11 U	115
		11 U	11 U	11 U	11 U	11 U	151
Vinyl Chloride		11 U	11 U	11 U	11 U	11 U	105
Chloroethane		11 U	11 U	11 U	11 💆	11 U	123
Methylene Chloride		18 渡り	30 Æ, U	16 🚜 U	34 B U	15 きり	98
Acetone		11 TU.	11 U	11 ີ່ປື້	11 Ü	10 3 Jan U	199
Carbon Disulfide		6 U	6 U	6 U	6 U	6 U	116
1,1-Dichloroethene		6 U	6 U	6 U	6 U	e u	119
1,1-Dichloroethane		6 U	6 U	6 U	6 Ü	6 U	135
1,2-Dichloroethene (6 V U	6 U	6 U	6 U	6 U	109
Chloroform		10 July BBU	10 5 JB U	10 4 HBU	10 5 JB U	1030	124
1,2-Dichloroethane_		6 U	6	6 ີ ບ	ຣິ ້ປ	6 U	161 * 9
2-Butanone		11 U	11 U	11 U	11 U	11 U	144
1,1,1-Trichloroethan	e	6 Ü	6 U	6 U	6 Ü	6 U	161 * 9
Carbon Tetrachloride		6 Ü	6 U	6 U	6 U	6 U	166 * 8
Bromodichloromethane		6 U	6 U	6 U	6 U	6 U	140
1,2-Dichloropropane_		6 U	6 U	6 U	6 U	6 U	128
cis-1,3-Dichloroprop	ene	6 U	6 U	6 U	6 U	6 U	129
		6 U	6 U	6 U	6 U	6 U	131
Dibromochloromethane		6 U	6 U	6 U	6 U	6 U	159 * 8
1,1,2-Trichloroethan	e	6 U	6 U	6 U	6 U	6 U	131 * 9
Benzene		6 U	6 U	6 U	6 U	6 U	117
Trans-1,3-Dichloropr	opene	6 U	6 Ü	6 U	6 U	6 U	123
Bromoform_		5 Ü	6 U	6 U	6 U	6 U	143 * 1
4-Methyl-2-pentanone		104 JB U	106IB0	1,1 U	10-6-JB ()	11 U	125
2-Hexanone		103 JB U	TO TOTAL	(OZE TBU	10 American	11 0	133
2-Hexanone Tetrachloroethene		6 U	6 U	6 U	6 U	6 U	147 *
1,1,2,2-Tetrachloroe		6 U	6 U	6 U	6 U		137 *
Toluene		6 U`	p 6 4	. 6 Ü	6 U	6 U	126

KLM RECCU WAMDEL: AGARTI	<u>80 C115</u>	UL: INGHANFOKD	KC-034 KU34T	WOLK OLGSL:	11343606001 P	<u>'aqe: lo</u>		
	Cust ID:	. JlivWO	J11VW0	J11VW1	J11VW1	J11VW2	J11VW2	2 .
	RFW#:	001	001 REPREP	002	002 REPREP	003	003 MS	ŝ
Chlorobenzene		10 3व्यक् र 8 थ	1054LBU	10 4 (FUE U	104 JB U	10 Harry B V	107	
Ethylbenzene		6 U	2 2 3	6 U	6 U	6 U	128	8
Styrene		10 July V	103 43BV	6 U	10 7 44BU	6 Ü	93	8
Xylene (total)		10 3-3BU	10 £ 4B U	6 U	io 1 JB U	6 U	119	۶
cis-1,2-dichloroethene		6 U	6 U	6 U	6 U	6 U	111	٥
trans-1,2-dichloroethene *= Outside of EPA CLP OC		6 U	6 0	6 U	6 . Ū	6 U	108	8

1/21/06

Volatiles by GC/MS, HSL List Report Date: 04/28/06 12:13

Cust ID:	J11VW2	J11V\3	J11VW4	J11VW4	J11VW5	J11VW5
Sample RFW#:	003 MSD	004	005	005	006	006
Information Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
D.F.:	0.962	0.943	0.980	1.00	0.962	0.962
Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg REPREP	ug/Kg	ug/Kg REPREP
Toluene-d8	116 %	112 %	119 %	149 * %	132 %	132 %
Surrogate Bromofluorobenzene	120 %	121 %	122 %	148 * %	127 * %	143 * %
Recovery 1,2-Dichloroethane-d4	152 * %	135 %	142 %	178 * %	146 😵	160 * %
	**************************************		======fl=== 11 U	=====fl=== 11 U		
Chloromethane	156 %	10 U	11 U	11 U		11 U.
Bromomethane	107 %	10 U	11 0	11 U		11 U
Chloroethane	122 %	10 U	11 U	11 U	11 U 11 U	11 U 11 U
Methylene Chloride	93 %	12 % U	21 25 0	30 \$ ∪		15 18
Acetone	218 %	10 T	11 Ü	11 0	22 類 ひ 11 む	10-7-4
Carbon Disulfide	114 %	5 Ū	6 D	6 U	6 D	6 U
1,1-Dichloroethene	120 %	5 Ü	6 U	6 U	6 17	6 U
1,1-Dichloroethane	133 %	5 Ü	6 Ū	6 U	6 U	6 U
1,2-Dichloroethene (total)	111 %	5 T	6 U	6 U	6 U	6 0
Chloroform	123 %	(O TIBU	1 03 VIEW V	10 5 JBV	103/1BU	10 3 - OB
1,2-Dichloroethane	162 * *	5 U	6 U	6 U	6 0	6 U
2-Butanone	165 %	10 U	11 U	11 U	11 U	11 U
1,1,1-Trichloroethane	162 * %	5 Ü	6 U	6 U	6 Ü	6 Ü
Carbon Tetrachloride	166 * %	5 U	6 U	6 U	6 U	6 U
Bromodichloromethane	144 * %	5 Ü	6 Ü	6 U	6 U	6 U
1,2-Dichloropropane	127 %	5 Ü	6 U	6 U	6 U	6 U
cis-1,3-Dichloropropene	124 %	5 Ü	6 U	6 U	6 U	6 U
Trichloroethene	134 %	5 Ü	6 U	6 U	6 Ü	6 U
Dibromochloromethane	152 * %	5 U	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane	125 %	5 Ü	6 U	6 U	6 U	6 U
Benzene	118 %	5 ប	6 U	6 U	6 Ü	6 U
Trans-1,3-Dichloropropene	123 %	5 U	6 U	6 U	6 U	6 U
Bromoform	145 * %	5 U	6 U	6 U	6 U	6 U
4-Methyl-2-pentanone	130 움	10 U	11 U	11 U	11 U	10 Tules
2-Hexanone	140 %	10 <u>U</u>	11		11 0	10 2 JB
Tetrachloroethene	141 * %	5 U	6 U	6 U	6 U	์ 6 ปี
1,1,2,2-Tetrachloroethane Toluene	140 * %	5 U	6 U	6 U	6 U	6 U
*= Outside of EPA CLP QC limits.	123 %	5 U	(3./ ⁶ U	6 U	6 U	6 U

	Cust ID:	J11VW2	2	J11VW3	J11VW4	J11VW4	J11VW5	J11VWS
	RFW#:	003 MSI)	004	005	005 REPREP	006	006 REPREP
Chlorobenzene		105	¥	10 26/200 U	10-3 TD-U	10 SM VB U	10 V/1/80 0	10 Flank
Ethylbenzene		100	&	5 *** ប៊	6 U	6 U	- 	6 U 1 0
Styrene		96	왐	5 U	6 U	6 U	6 U	6 U 6
Xylene (total)		114	*	5 U	6 U	6 U	6 U	6 U
cis-1,2-dichloroethene		111	*	5 U	6 U	6 U	6 U	6 0
trans-1,2-dichloroethene *= Outside of EPA CLP QC		110	*	5 U	6 U	6 U	6 U	6 U V

6/21/9

HIUMVILLE HODOLOUVY, INC.

Volatiles by GC/MS, HSL List

Report Date: 04/28/06 12:13 Client: TNUHANFORD RC-032 K0321 Work Order: 11343606001 Page: 3a RFW Batch Number: 0604L780

Cust	ID:	J11VW6	J11VW6	VB	LKXL		VBLKXL BS	VBLKXR	VBLKXR BS	
Sample R	FW#:	007	007	06	LVK062-M	в1	06LVK062-MB1	06LVK063-MB	L 06LVK063-MB1	1
	rix:	SOIL	SOIL		SOIL		SOIL	SOIL	SOIL	
D	.F.:	0.962	0.962		1.0	0	1.00	1.00	1.00	
Un	its:	ug/Kg	ug/Kg REPREP		ug/K	g	ug/Kg	ug/Kg	ug/Kg	
Toluen	e-d8	127 %	169 * %		117	8	108 %	109	130 %	¥
Surrogate Bromofluoroben	zene	139 * *	164 * %		122	¥	109 %	120	116 °8	ક
Recovery 1,2-Dichloroethan		146 %	174 * %	1	140	ۇ دا	134 %			*
Chloromethane			11 U	3	10	.=LT	.======E 77 %			f] %
Bromomethane		11 U	11 U	1	10	U	113 %	10		と
Vinyl Chloride		11 U	1 1 U	- 1	10	U	77 %	10		ł
Chloroethane		11 U	11 U	- 1	10	U	95 %	10		ř
Methylene Chloride		22 😿 U	20 复	ับ	8		60 %	10	·	욷
Acetone		11 Ü	1.1 0		3	J	172 %	4		岩
Carbon Disulfide		6 U	6 U		′ 5	Ū	94 🕏	5		š
1,1-Dichloroethene		6 U	6 U	i	5	σ	94 %	5	J 104 9	퇕
1,1-Dichloroethane		6 U	6 U]	5	U	106 %	5	U 116 9	욯
1,2-Dichloroethene (total)		6 U	6_ U	į	5	Ü	91 %	5	J 101 1	ê
Chloroform		to 26 JBV	10 4 Bu	ง เ	2	J	98 %	2	J 109 %	ž
1,2-Dichloroethane		ชีรีบ	670		5	Ū	128 %	5	D 143 * 9	ş
2-Butanone		11 U	11 U	į	10	Ū	125 %	1	J 117 8	*
1,1,1-Trichloroethane		6 U	6 U	!	5	Ū	129 %	5	U 138 4	ę.
Carbon Tetrachloride		6 U	6 U		5	Ü	136 %	5	J 140 %	왐
Bromodichloromethane		6 U	6 U		5	σ	115 %	5	U 126 9	%
1,2-Dichloropropane		6 U	6 U		· 5	U	100 %	5	J 112 8	ક
cis-1,3-Dichloropropene		6 U	6 U		5	Ü	98 %	5	ៗ 130 ។	왕
Trichloroethene		6 U	6 U		5	Ū	114 %	5	J 124 8	왕
Dibromochloromethane		6 U	6 U		5	U	116 %	5	J 153 * %	ૄ
1,1,2-Trichloroethane		6 U	6 U		5	Ω	92 %	5	J 125 %	ş
Benzene		6 U	6 Ü		5	U	99 %	5	J 110 %	왐
Trans-1,3-Dichloropropene		6 Ü	6 U		5	U	95	5	U 131 * %	ò
Bromoform		6 U	6 U		5	Ū	111 %	5	J 150 * %	양
4-Methyl-2-pentanone		11 U	ال 11 ال	_	3	J	89 %	2		%
2-Hexanone		11 U	10 2 Marga	JŲ	2	J	106 %	3	J 142 %	°
Tetrachloroethene		6 U	6 U		5	Ū	116 %	5	J 144 * %	å
1,1,2,2-Tetrachloroethane		6 U	6 U		, 5	Ü	85 %	5	U 104 %	કૃ
Toluene		6 U	6 U		5	Ū	101 %	S	ៗ 130 ខ	ş

*= Outside of EPA CLP QC limits.

N 0/21/00

	Cust ID:	J11VW6	J11VW6	VBLKXL		VELKXL BS	VBLKXR	VBLKXR BS	
	RFW# :	007	007 REPREP	06LVI	C062-ME	31	06LVK062-MB	06LVK063-MB1	06LVK063-MB1
Chlorobenzene		(6.3 U B U	10 5470	177	3	J	. 92	з 3 Л	119 %
Ethylbenzene		6 U	ຣີຫ	1	5	U	102	5 U	127 %
Styrene		6 U	6 Ū		2	J	90 \$	1 J	122 %
Xylene (total)		6 U	6 U		2	J	93 \$	· 2 J	122 %
cis-1,2-dichloroethene		6 U	6 U		5	Ū	90 8	s 5 U	101 %
trans-1,2-dichloroethene		6 U	6 U	V	5	U	93 %	ร 5 บ	101 %
*= Outside of EPA CLP QC	limits.								

pe 4/21/0

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD RC-032

LVL#: 0604L780

SDG/SAF # K0321/RC-032

W.O. #: 11343-606-001-9999-00

Date Received: 04-14-2006

GC/MS VOLATILE

Seven (7) soil samples were collected on 04-11-2006.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 04-24,25-2006.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

- 1. Samples were analyzed within required holding time.
- 2. Non-target compounds were detected in the samples.
- 3. Twenty-four (24) of fifty-four (54) surrogate recoveries were outside acceptance criteria. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample J11VW2. All other out of criteria samples were reanalyzed on 04-24,25-2006 and reported.
- 4. Sixteen (16) of seventy (70) matrix spike recoveries were outside acceptance criteria.
- 5. Five (5) of seventy (70) blank spike recoveries were outside acceptance criteria.
- 6. The method blanks contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 3x the CRQL and the target compounds Chloroform, 2-Hexanone, 4-Methyl-2-pentanone, Chlorobenzene, Xylene (total) and Styrene at levels less than the CRQL. The method blank 06LVK063-MB1 also contained the target compound 2-Butanone at a level less than the CRQL.
- 7. Internal standard area criteria were not met for samples J11VW0, J11VW1, J11VW6 and J11VW4 RE. The initial sample analysis fulfills the reanalysis requirement of sample J11VW4 RE. All other out of criteria samples were reanalyzed on 04-24,25-2006 and reported.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 3 0 pages.

- 8. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Iain Daniels

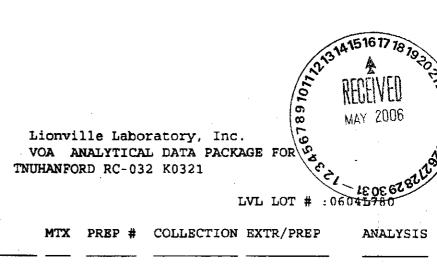
Laboratory Manager

Lionville Laboratory Incorporated

som\group\data\voa\tnu-hanford\0604-780.doc

5/1/65 Date





DATE RECEIVED: 04/14/06

rar i	LOT #	:060415	180
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CLIENT ID	LVL #		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11VW0	001		- — s	06LVK062	04/11/06	N/A	04/24/06
J11VW0	001	R1	S	06LVK062	04/11/06	N/A	04/24/06
J11VW1	002		s	06LVK062	04/11/06	N/A	04/24/06
J11VW1	002	R1	S	06LVK062	04/11/06	n/A	04/24/06
J11VW2	003		s	06LVK062	04/11/06	N/A	04/24/06
J11VW2	003 M	s	S	06LVK062	04/11/06	N/A	04/24/06
J11VW2	003 M	SD	S	06LVK062	04/11/06	N/A	04/24/06
J11VW3	004		s	06LVK062	04/11/06	N/A	04/24/06
J11VW4	005		S	06LVK062	04/11/06	N/A	04/24/06
J11VW4	005	R1	S	06LVK062	04/11/06	N/A	04/24/06
J11VW5	006		s	06LVK062	04/11/06	N/A	04/24/06
J11VW5	006	R1	S	06LVK063	04/11/06	N/A	04/25/06
J1 1VW6	007		s	06LVK062	04/11/06	N/A	04/24/06
J11VW6	007	R1	S	06FAK063	04/11/06	N/A	04/25/06
AB QC:							•
						•	
VBLKXL	MB1		s	06LVK062	N/A	N/A	04/24/06
VBLKXL	MB1 B	S	S	06LVK062	N/A	N/A	04/24/06
VBLKXR	MB1		s	06LVK063	N/A	N/A	04/25/06
VBLKXR	MB1 B	S	S	06LVK063	N/A	N/A	04/25/06

Washington Closure Hanford			THE TOTAL PROPERTY OF THE PROP							RC	-032-034	Page 2	of <u>3</u>
Collector Coffman								oordinator	Price Code		Data T	urmaround	
Protect Designation 100-F Remaining Sites Burial Grounds - Soil Full Protocol			Sampling Location 128-F-3 Verification				SAF No. RC-032		Air Quality		15	DAY	
Ice Chest No. AFS-04-120			Logbook No. L-1174-l		COA RIDSES	8000		Method o	Shioment			<u>-</u>	
Shipped To EBERLINE SERVICES LICHVILLE			e Property No. 20192000 P. T.C.	4/11/06	A060	355		Bill of La	ding/Air Bil	I No.	05,	PC	
POSSIBLE SAMPLE HAZ	ARDS/REMARKS	-											
NA			Preservation	None	Cnol 4C	Cool 4C	Cool	IC			l		
Special Handling and/or :	Storage	•	Type of Container	G/P	aG	₃G	*G						1
Cool 4 degrees C			No. of Container(s)	t	1	1 1	1						
			Volume	250mi.	60mL	120mL	125n	ni.					
00024	SAMPLE ANAL	YSIS		See item (1) in Special Instructions.	Chromism Hex - 7196	VOA - 8266A (TCL)	Posticid 608						
Sample No.	Matrix *	Sample Date	Sample Time					NI STA			Records.		
J11VW0	SOIL	4/11/03	0815	X	Х	X	X				Selectoria (192	i Pirit melan ilin 	F3-4
111VW1	SOIL		0815	X	X	X	<u> </u>				 	 	F3-6
11VW2	SOIL		0825	×	X	Χ							
11 VW3	SOIL)	0835	X	X	X	×	`					F3-
11VW4	SOIL	4/11/06		\ \	\ \\ \\	×	 (<u> </u>		F3-
CHAIN OF POSSESSIO	N	Sign/Prin			I CREC	IAL INSTR		200			<u> </u>	<u></u>	F3-
elinquished By/Removed From RTCo: FM Bol PT Clf elinquished By/Removed From 3728#2C 4-12-	Date/Time	Processed By Pp	20 3728 4/	ntc/Tiese /4: ///06 ne/Time	(1) K Cadm Nicke	CP Metals - 60) ium, Calcium, (10 (Client Chromius	: List) (Alumi n. Cobalt. Co	ooce, Iron, Len	/, Arsenic, Barium, I d, Magnesium, Man adium, Zino); Merci	more Malake	leaun.	Matrix * S=Soil SE=Solid SI=Sludge
pinguister fly Report From G	UCH Date/Time	Received By/Stored In Date/Titre						W = Water O-Oil A-Air DS-Drum S					
elinquished By/Removed From ECLFX	Date/1 ime	Received By/Stos	red in P	te/Time 6 092	5	1				OL-Orus Liqu T=Ynone WhoWipe L=Liquid V=Vegetation X=Other			
eliuquished By/Removed From	Date/Time	Received By/Stor				Personnel not available to relinquish samples from 3728					-		
clinquished By/Removed From	Date/Time	Received By/Stor	red in Da	te/Time	Ref	nquisa samp # <u>2C</u> on_Y	الحوا	06					
ABORATORY Received in	у			Tik	le .		- , <u></u>		·	 	D	ate/l'ime	
FINAL SAMPLE Disposal M DISPOSITION	ethod	-				Dispor	sed By				Þ	ate/Time	·

Washington Closure Hanford			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST RC-032-03							Page 1 of 1				
Collector Coliman			Company Contact Telephone No. R.T. Coffman 528-6409				Project Coon KESSNER, Ji		Price Code		Data Turnaround			
Project Designation 100-F Remaining Sites Burial Grounds - Soil Full Protocol			Samuling Location 128-F-3 Verification					SAF No. RC-032		Air Quality [15	15 DAY	
Ice Chest No. AF5-04-120			EFL-1174-1			COA Rizgf32000		Method of Shipment Fed Ex		-				
Shipped To EBERLINE SERVICES LIONVILLE			Offsite Property No. 8128733000 PTC 4/11/00			A060355		Bill of Lading/Air Bill No. SEE OSPC		o _C				
POSSIBLE SAMPLE HAZ	RDS/REMARKS					I	<u> </u>		T		1	1	T	
NA			Preservation	None G/P	Cool 4C	Cool 4C	Cool 40	2						
Special Handling and/or !	Storage		Type of Container		#G	₩G	∍G							
Cool 4 degrees C			No. of Container(s)	1	J	ı	1							
			Volume	250mL	60aniL	120mL	125m	i,			·			
00025	SAMPLE ANAL	.YSIS		Son item (1) in Special Instructions	Chromium Hex - 7196	VOA - 8266A (TCL)	Pesticide 8081							
Sample No.	Matrix *	Sample Date	Sample Time					Ald Harris Add						
111VW5	SOIL	4/11/06	0855	X	X	χ	X				af of the Shall seed of the Late	2 ASSOCIATION OF THE PARTY OF T	F3-1	
J11VW8	SOIL	4/11/04	0905	X	Χ	X	X						F3-	
-			- 						-				<u> </u>	
		-		 	· <u> </u>				-			 	 	
CHAIN OF POSSESSIO)N	Sign/Prin	t Names	<u> </u>	SPEC	IAL INSTR	IICEIOI		ــــــ			<u> </u>	 	
Relinquished By/Removed From RTCoffmAs/PTCof	bna_ 4/11/06	Received By/Stor	ed In Da	W/Time (43)	۵ (۱) K	P Metais - 601	0 (Client I	List) (Aluminum	Antimony,	Arsenic, Ba	rium, Beryllium, Bon	Digita	Matrix 5-5-8	
Relinquished By/Removed From 3728#2C 4-12	Date/Time	Received By/Stor		te/Time	Nicke	nati, Calçaum, (.hromium	. Cobalt. Copper.	Iron, Lead	Magnesium	n, Manganese, Molyb Mercury - 7471 - (C	denum	SO-Salid SI-Steller W - Weles	
JR Handen	CH Date/Time C/2-06 /500	Received By/Stor	ed in Da	te/Time							O-Qil A-Air DS-Orus Salid			
Relinquished By/Removed From	Date/Time	Received By/Stor	ed In , De	10/Time 0925						DL=Dram Liquic T=Tions WI=Wipe				
Refinquished By/Removed From	Date/Time	Received By/Ston		le/Time	Personnel not available to					L=Legald V=Vegetation X=Other				
telinquished By/Removed From	Date/Time	Received By/Stoe	ed in Da	te/Time	relin	quish sample 2 Con 4	s from 3	728 26						
LABORATORY Received By	,			Title								ate/Time	<u> </u>	
SECTION											U	And This		

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	(c)	D]	Ξ
PROJECT: /O	UF 128	-F-J	DATA PACKAG	E: K032	-1	
VALIDATOR:	TLI	LAB: LL	Γ	DATE: C(5)	/oc	
·			SDG:	K0251		
		ANALYSES	PERFORMED			
SW-846 8260)		SW-846 8260 (TCLP)	SW-846 8270		SW-846 (TCLP)	
SAMPLES/MAT	RIX					
JIIVWO	JUVW	JUVW	2 JIIVh	J3		
J111W4	 					
						
				-	Sair	1
					50°1	<u> </u>
echnical verificati		present?				No N/
echnical verificati		present?				~
echnical verificati	ion documentation p	present?				~
echnical verificati	ion documentation p	present?				~
echnical verificati	ion documentation p	present?				~
echnical verificati	ion documentation p	present?				~
echnical verificati	ion documentation p	ND CALIBRATION	ON (Levels D and	E)	Yes(No) N/
echnical verificationments: INSTRUM	MENT TUNING A	ND CALIBRATIO	ON (Levels D and	E)	Yes(No N/
echnical verificationments: INSTRUM C/MS tuning/perinitial calibrations	MENT TUNING A	ND CALIBRATIC	ON (Levels D and	E)	Yes(No N/
echnical verificationments: INSTRUM C/MS tuning/perinitial calibrations a	MENT TUNING A formance check acc acceptable?	ND CALIBRATIO	ON (Levels D and	E)	Yes(No N/. No N/. No N/.
echnical verification of the comments: INSTRUM COMS tuning/performatical calibrations and calibrations at tandards traceable	MENT TUNING A formance check acc acceptable?	ND CALIBRATIO	ON (Levels D and	E)	Yes(No N/. No N/. No N/. No N/.
INSTRUM Comments: INSTRUM GC/MS tuning/performitial calibrations attandards traceable tandards expired?	MENT TUNING A formance check acc acceptable?	ND CALIBRATIO	ON (Levels D and	E)	Yes(No N/. No N/. No N/. No N/. No N/.

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	1	
Calibration blanks analyzed? (Levels D, E)	No(N/A/
Calibration blank results acceptable? (Levels D, E)	No(N/A)
Laboratory blanks analyzed?Yes	No	N/A
Laboratory blank results acceptable?	No)	N/A
Field/trip blanks analyzed? (Levels C, D, E)	No)	N/A
Field/trip blank results acceptable? (Levels C, D, E)	No	(V/A)
Transcription/calculation errors? (Levels D, E)	No	(N)
acefore - W2 +WSR - U at RQL (XDF OKILLETER)	~° [<u>透</u> —
Chlorofon - Vat Ral - all		
H-methyl-2-pertane. + 2 hexane - U at RQL - all details		
4. ACCURACY (Levels C, D, and E)		
	_	N/A
Surrogate/system monitoring compound recoveries acceptable? Yes	\sim	~~
Surrogates traceable? (Levels D, E)		
Surrogates expired? (Levels D, E)		_
MS/MSD samples analyzed?		
	No	N/A
·	•	N/A
MS/MSD standards? (Levels D, E)	No	(VA)
LCS/BSS samples analyzed?	No	N/A
LCS/BSS results acceptable?	No	N/A
Standards traceable? (Levels D, E)	No	(N/A)
Standards expired? (Levels D, E)	No	(V/A)
Franscription/calculation errors? (Levels D, E)	No	(V)
Performance audit sample(s) analyzed?	No,	N/A
Performance audit sample results acceptable?	No (NA
Comments: WOR, WI, WIR, WYRX WLR-Surr - J all detects		
WO- J-Chlorosona 4mcs/2-2 pensone sur 2-heren - Si	170	
W5R-J 11 11 11 11 11		
NO US/MSD Sor 5R + GR- Jall no	DK	

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)		١.	
MS/MSD samples analyzed?	(Yes	No	N/A
MS/MSD RPD values acceptable?	Ves	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	(N/A
MS/MSD standards expired? (Levels D, E)	Yes	No	
Field duplicate RPD values acceptable?	(Yes)	, No	N/A
Field split RPD values acceptable?			
Transcription/calculation errors? (Levels D, E)	Yes	No	(N)
Comments: NO MS/MSD So 5P+CR-Jall			
			<u></u>
6. SYSTEM PERFORMANCE (Levels D and E)			\bigcap
Internal standards analyzed?			1.
Iinternal standard areas acceptable?			1
Internal standard retention times acceptable?			ľ
Standards traceable?		- 1	
Standards expired?			
Transcription/calculation errors?	Yes	No	N/A
Comments:	<u> </u>		
7. HOLDING TIMES (all levels)			
Samples properly preserved?	(Yes	No	N/A
Sample holding times acceptable?	\Yes	No	N/A
Comments:			

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GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETEC	TION LIMITS (all
levels)	24
Compound identification acceptable? (Levels D, E)	Yes No (V/A)
Compound quantitation acceptable? (Levels D, E)	Yes No NA
Results reported for all requested analyses?	Ye No N/A
Results supported in the raw data? (Levels D, E)	Yes No (N/A)
Samples properly prepared? (Levels D, E)	Yes No (N/A)
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes No N/A
Detection limits meet RDL?	Yes (No) N/A
Transcription/calculation errors? (Levels D, E)	
Comments:	
44+10+12+12 = 79 one	
·	
9. SAMPLE CLEANUP (Levels D and E)	^
GPC cleanup performed?	Yes No (N/A)
GPC check performed?	Yes No N/A
GPC check recoveries acceptable?	Yes No N/A
GPC calibration performed?	Yes No N/A
GPC calibration check performed?	
GPC calibration check retention times acceptable?	<i>t</i> 1
Check/calibration materials traceable?	i i
Check/calibration materials Expired?	i 1
Analytical batch QC given similar cleanup?	Yes No N/A
Transcription/Calculation Errors?	Yes No N/A
Comments:	

Date:

21 June 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Site 128-F-3

Subject: Inorganic - Data Package No. K0321-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0321 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J11VW0	4/11/06	Soil	С	See note 1
J11VW1	4/11/06	Soil	С	See note 1
J11VW2	4/11/06	Soil	С	See note 1
J11VW3	4/11/06	Soil	C	See note 1
J11VW4	4/11/06	Soil	С	See note 1
J11VW5	4/11/06	Soil	С	See note 1
J11VW6	4/11/06	Soil	С	See note 1

¹⁻ ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, the silver result in sample J11VW5 was qualified as an estimate and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

· Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less

than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (59.5%), all antimony results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (43.1%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J11VW0/J11VW1) were submitted for analysis. Field duplicates are assessed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All undetected selenium and silver results exceeded the RQL. All cadmium results in samples J11VW2, J11VW3 and J11VW5 exceeded the RQL. Under the WCH statement of work, no qualification is required. All other results met the RQL.

Completeness

Data package No. K0321 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the silver result in sample J11VW5 was qualified as an estimate and flagged "UJ".
- Due to a matrix spike recovery outside QC limits (45.1%), all antimony results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (54.8%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All undetected selenium and silver results exceeded the RQL. All cadmium results in samples J11VW2, J11VW3 and J11VW5 exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

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Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0821	REVIEWER	Pacinc #1, 11,28, F-3	PAGE 11 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silver	UJ	J11VW5	Blank contamination
Antimony	J	All	MS recovery
Silicon	J	All	LCS recovery

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WAS	HINGT	ON CLO	SUF	RE HANF	ORI	<u> </u>]							
Lab: LLI	SDG:	K0321													
Sample Numb	er	J11VW0		J11VW1		J11VW2		J11VW3		J11VW4		J11VW5		J11VW6	
Remarks				Duplicate											
Sample Date		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06	
Inorganics	RQL	Result	Q	Result	Q	Result		Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.23	U	0.23	U	0.22	U	0.22	U	0.22	U	0.28	UJ	0.23	U
Aluminum		5980		6360		5510		4540		7100		5770		5930	
Arsenic	10	2.0		2.6	<u> </u>	2.3		2.3		2.4		2.6		2.0	U
Boron		11.4		13.2		2.4		0.88		21.8	Ī	5.4		5.5	Г
Barium	2	214		235		60.7		36.7		290		98.2		141	
Beryllium		0.50		0.54		0.32		0.29		0.62		0.41		0.58	
Calcium		5840		6050		3070		2420		6140		3390		3870	
Cadmium	0.2	0.25		0.26		0.22	U	0.22	U	0.25		0.23	C	0.27	
Cobalt		7.2		7.2		5.2		4.7		6.6		5.5		6.6	
Chromium	1	13.7		14.8		12.6		8.9		10.2		13.1		9.8	
Copper		23.0		25.7		18.5		15.0		20.0		19.7		11.6	
iron		18400		18400		12100		10900		17500		12700		18300	
Mercury	0.2	0.02	ح	0.02		0.02	حا	0.02	U	0.02		0.02	υ	0.02	U
Potassium		1120		1110		852		676		1290		903		1340	
Magnesium		3620	·	3660		3660		3100		3730		3650		3440	
Manganese		327		326		234		219		304		239		331	
Molybdenum		0.94	C	0.96	۵	0.92	U	0.90	U	0.92	U	0.94	υ	0.96	υ
Sodium		192		233		96.2		67.9		301		201		120	
Nickel		10.7		10.9		12.5		9.5		10.2		11.8		9.2	
Lead	5	5.2		5.7		3.4		3.1		4.7		3.5		8.3	
Antimony		1.4	IJ	1.5			UJ			1,4	IJ	1.4	IJ	1.5	UJ
Selenium	1	1.5	U	1.6	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
Silicon		584	J	548	j	476	J	442	J	555	J	552	J	392	j
Vanadium		50.8		52.4		26.5		23.7		48.0		29.1		46.4	
Zinc	1	59.6		54.1		31.6		26.4		46.6		34.7		44.8	

INORGANICS DATA SUMMARY REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L780

•		·			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
******	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		*****	****	****	******
-001	J11VW0	Silver, Total	0.23 u	MG/KG	0.23	3.0
	•	Aluminum, Total	5960	MG/KG	9.3	3.0
		Arsenic, Total	2.0	MG/KG	2.0	3.0
		Boron, Total	11.4	MG/KG	0.78	3.0
		Barium, Total	214	MG/KG	0.06	3.0
	•	Beryllium, Total	0.50	MG/KG	0.06	3.0
		Calcium, Total	5040	MG/KG	5.3	3.0
		Cadmium, Total	0.25	NG/KG	0.23	3.0
		Cobalt, Total	7.2	MG/KG	0,45	3.0
		Chromium, Total	13.7	MG/KG	0.42	3.0
		Copper, Total	23.0	MG/KG	0.39	3.0
	•	Iron, Total	18400	MG/KG	11.3	3.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1120	MG/KG	7.4	3.0
		Magnesium, Total	362D	MG/KG	3.1	3.0
		Manganese, Total	327	MG/KG	0.1	3.0
		Molybdenum, Total	0.94 u	MG/KG	0.94	3.0
		Sodium, Total	192	MG/KG	2.5	3.0
		Nickel, Total	10.7	MG/KG	0.78	3.0
		Lead, Total	5.2	MG/KG	1.0	3.0
		Antimony, Total	1.4 น	∫м с /кс	1.4	3.0
		Selenium, Total	1.5 u	MG/KG	1.5	3.0
		Silicon, Total	584 J	MG/KG	7.4	3.0
		Vanadium, Total	50.8	MG/KG	0.29	3.0

Zine, Total

Mulrila

MG/KG

INORGANICS DATA SUMMARY REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0504L780

	•				reporting	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
*******	*************					
-002	J11VW1	Silver, Total	0.23 u	MG/KG	0.23	3.0
		Aluminum, Total	6360	MG/KG	9.5	3.0
	•	Arsenic, Total	2.6	MG/KG	2.0	3.0
		Boron, Total	13.2	NG/KG	0.79	3.0
		Barium, Total	235	MG/KG	0.07	3.0
		Beryllium, Total	0.54	MG/KG	0.67	3.0
	·	Calcium, Total	6050	MG/KG	5.4	3.0
		Cadmium, Total	0.26	MG/KG	0,23	3.0
	·	Cobalt, Total	7.2	MG/KG	0.46	3.0
		Chromium, Total	14.8	MG/KG	0.43	3.0
	•	Copper, Total	25.7	MG/KG	0.40	3.0
		Iron, Total	18400	ма/ка	11.5	3.0
	•	Mercury, Total	0.02	MG/KG	0.02	1.0
•	4	Potaggium, Total	1110	MG/KG	7.5	3.0
	•	Magnesium, Total	3660	MG/KG	3.2	3.0
	•	Manganese, Total	326	MG/KG	0.1	3.0
	, ,	Molybdenum, Total	0.96 u	MG/KG	0.96	3,0
		Sodium, Total	233	MG/KG	2.5	3.0
	•	Nickel, Total	10.9	MG/KG	0.79	3.0
		Lead, Total	5.7	MG/KG	1.0	3.0
	•	Antimony, Total	1.5 u	MG/KG	1.5	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Silicon, Total	548 J	MG/KG	7.5	3.0
	•	Vanadium, Total	52.4	MG/KG	0.30	3.0
		Zinc, Total	54.1	MG/KG	0.53	3.0

6/21/oc

INORGANICS DATA SUMMARY REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0604L780

		·			RBPORTING	DIPOLION
SAMPLE	SITE ID	ANALYTE	REGULT	UNITS	LIMIT	FACTOR
#3#####		\$0\$ # # £			=========	******
- 003	J11VW2	Silver, Total	0.22 u	MG/KG	0.22	3.0
		Aluminum, Total	5510	MG/KG	9.1	3.0
		Arsenic, Total	2.3	MG/KG	1.9	3.0
		Boron, Total	2.4	MG/KG	0.76	3.0
		Barium, Total	60.7	MG/KG	0.06	3.0
		Beryllium, Total	0.32	MG/KG	0.06	3.0
		Calcium, Total	3070	MG/KG	5.2	3.0
		Cadmium, Total	0.22 u	MG/KG	0.22	3.0
·	Cobalt, Total	5.2	MG/KG	0.44	3.0	
		Chromium, Total	12.6	NG/KG	D.41	3.0
		Copper, Total	18.5	MG/KG	0.38	3.0
	•	Iron, Total	12100	MG/KG	11.0	3.0
	,	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	852	MG/KG	7.2	3.0
		Magnesium, Total	3660	MG/KG	3.1	3.0
•	•	Manganese, Total	234	MG/KG	0.09	3.0
		Molybdenum, Total	0.92 u	MG/KG	0.92	3.0
		Sodium, Total	96.2	MG/KG	2.4	3.0
		Nickel, Total	12.5	MG/KG	0.76	3.0
		Lead, Total	3.4	MG/KG	0.98	3.0
		Antimony, Total	1.4 u	TMG/KG	1.4	3.0
		Selenium, Total	· 1.5 <u>u</u>	MG/KG	1.5	3.0
		Silicon, Total	476 J	MG/KG	7.2	3.0
		Vanadium, Total	26.5	MG/KG	0.28	3.0
		Zinc, Total	31.6	MG/KG	0.51	3.0

1/2/04

INORGANICS DATA SUMMARY REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0604L780

	•				RBPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LINIT	FACTOR
***			C23C3C3R	医医电阻性	*******	******
-004	J11VW3	Silver, Total	0.22 u	MG/KG	0.22	3.0
		Aluminum, Total	4540	MG/KG	8.9	3.0
		Arsenic, Total	2.3	MG/KG	1.9	ο, ε
		Boron, Total	0.88	MG/KG	0.75	3.0
		Barium, Total	36.7	MG/KG	0.06	3.0
	•	Beryllium, Total	0.29	MG/KG	0.06	3.0
	,	Calcium, Total	2420	MG/KG	5.1	3.0
		Cadmium, Total	0.22 u	MG/KG	0.22	3.0
		Cobalt, Total	4.7	MG/KG	0.43	3.0
		Chromium, Total	8.9	MG/KG	0.40	3.0
		Copper, Total	15.0	MG/KG	0.37	3.0
		Iron, Total	10900	MG/KG	10.8	3.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
	•	Potassium, Total	676	MG/KG	7.0	3.0
		Magnesium, Total	3100	MG/KG	3.0	3.0
•		Manganese, Total	219	MG/KG	0.09	3.0
		Molybdenum, Total	0.90 u	MG/KG	0.90	3.0
		Sodium, Total	67.9	MG/KG	2.4	3.0
		Nickel, Total	9.5	MG/KG	0.75	3.0
		Lead, Total	3.1	MG/KG	0.96	3.0
		Antimony, Total	1.4 u	T MG/KG	1.4	3.0
		Selenium, Total		MG/KG	1.5	3.0
		Silicon, Total	442	MG/KG	7.0	3.0
		Vanadium, Total	23.7	MG/KG	0.20	3.0
		Zinc, Total	26.4	MG/KG	0.50	3.0

W121/04

INORGANICS DATA SUMMARY REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L780

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	result	UNITS	LIMIT	FACTOR
******			CIRRRADO	*****	********	
-005	J11VW4	Silver, Total	0.22 u	MG/KG	0.22	3.0
		Aluminum, Total	7100	HG/KG	9.2	3.0
		Arsenic, Total	2.4	MG/KG	1.9	3.0
		Boron, Total	21.8	MG/KG	0.76	3.0
		Barium, Total	290	MG/KG	0.06	3.0
		Beryllium, Total	0.62	MG/KG	0.06	3.0
		Calcium, Total	6140	MG/KG	5.2	3.0
		Cadmium, Total	0.25	MG/KG	0.22	3.0
		Cobalt, Total	6.6	MG/KG	0.45	3.0
		Chromium, Total	10.2	NG/KG	0.41	3.0
		Copper, Total	20.0	MG/KG	0.38	3.0
		Iron, Total	17500	MG/KG	11.1	3.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Potassium, Total	1290	MG/KG	7.2	3.0
		Magnesium, Total	3730	MG/XG	3.1	3.0
		Manganese, Total	304	MG/KG	0.1	3.0
		Molybdenum, Total	0.92 ц	MG/KG	0.92	3.0
		Sodium, Total	301	MG/KG	2.4	3.0
		Nickel, Total	10.2	NG/KG	0.76	3.0
		Lead, Total	4.7	MG/KG	0.99	3.0
		Antimony, Total	1.4 u	TMG/KG	1.4	3.0
		Selenium, Total	1.5 น	NG/KG	1.5	3.0
		Silicon, Total	555 J	MG/KG	7.2	3.0
		Vanadium, Total	48.0	MG/KG	0.29	3.0
		Zing, Total	46.6	MG/KG	0.51	3.0

P.6/21/06

INORGANICS DATA SUMMARY REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L780

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		•			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LINIT	PACTOR
****			*****	*****		
-006	J11VW5	Silver, Total	0.28 UJ	MG/KG	0.23	3.0
		Aluminum, Total	5770	MG/KG	9.3	3.0
		Armenic, Total	2.6	MG/KG	2.0	3.0
		Boron, Total	5.4	MG/KG	0.77	3.0
		Barium, Total	98.2	MG/KG	0.06	3.0
	•	Beryllium, Total	0.41	MG/KG	0.06	3.0
		Calcium, Total	3390	MG/KG	5.3	3.0
		Cadmium, Total	0.23 u	MG/KG	0.23	3.0
		Cobalt, Total	5.5	mg/kg	0.45	3.0
		Chromium, Total	13.1	MG/KG	0.42	3.0
		Copper, Total	19.7	MG/KG	0.39	3.0
		Iron, Total	12700	MG/KG	11.3	3.0
		Mercury, Total	0.02 ц	NG/KG	0.02	1.0
		Potassium, Total	903	MG/KG	7.3	3.0
		Magnesium, Total	3650	NG/KG	3.1	3.0
		Manganese, Total	239	MG/KG	0.1	3.0
		Molybdenum, Total	0.94 1	MG/KG	0.94	3.0
		Sodium, Total	201	MG/KG	2.5	3.0
•		Nickel, Total	11.8	MG/KG	0.77	3.0
		Lead, Total	3.5	MG/KG	1.0	3.0
		Antimony, Total	1.4 u	MG/KG	1.4	3.0
		Selenium, Total	1.5 u	MG/KG	1.5	3.0
		Silicon, Total	552 J	MG/KG	7.3	3.0
		Vanadium, Total	29.1	MG/KG	0.29	3.0
		Zinc. Total	34.7	MG/KG	0.52	3.0

W (2,10h

INORGANICS DATA SUMMARY REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L780

		· ·	*		REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	result	UNITS	LIMIT	FACTOR
****		美国政策共和党公司公司公司公司公司的	ZCRREEGR	****	C & C & D & D & D & D & D & D & D & D & D &	6252EEE
-007	J11VW6	Silver, Total	0.23 u	MG/KG	0.23	3.0
		Aluminum, Total	5930	MG/KG	9.5	3.0
		Arsenic, Total	2.0 u	MG/KG	2.0	3.0
		Boron, Total	5.5	MG/KG	0.79	3.0
		Barium, Total	141	MG/KG	0.07	3,0
		Beryllium, Total	0.58	MG/KG	0.07	3.0
•		Calcium, Total	3870	MG/KG	5.4	3., 0
		Cadmium, Total	0.27	MG/KG	0.23	3.0
	•	Cobalt, Total	6.6	MG/KG	0.46	3.0
	•	Chromium, Total	9.8	MG/KG	0.43	3.0
	·	Copper, Total	11.6	MG/KG	0.40	3.0
		Iron, Total	18300	MG/KG	11.5	3.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1340	MG/KG	7-5.	3.0
		Magnesium, Total	3440	MG/KG	3.2	3.0
		Nanganese, Total	331	MG/KG	0.1	3.0
		Molybdenum, Total	0.96 u	MG/KG	0.96	3.0
		Sodium, Total	120	MG/KG	2.5	3.0
		Nickel, Total	9.2	MG/KG	0.79	3.0
		Lead, Total	8.3	MG/KG	1.0	3.0
		Antimony, Total	1.5 u	Tng/kg	1.5	3.0
		Selenium, Total	1.5 u	MG/KG	1.5	3.0
		Silicon, Total	392 J	MG/KG	7. S	3.0
		Vanadium, Total	46.4	MG/KG	0.30	3.0
		Zine, Total	44.8	MG/KG	0.53	3.0

W W W W



Analytical Report

Client: TNU-HANFORD RC-032

LVL#: 0604L780

SDG/SAF#: K0321/RC-032

W.O.#: 11343-606-001-9999-00

Date Received: 04-14-06

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

- 1. This narrative covers the analyses of 7 soil samples.
- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All samples were reported with 3-fold dilutions for ICP metals due to high concentrations and sample matrix.
- 3. All analyses were performed within the required holding times.
- 4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
- 5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 6. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 7. All ICP Interference Check Standards were within control limits.
- 8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 43.1%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.
- 9. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 27 pages.

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10. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

•		<u>PDS</u>	<u>PDS</u>
Sample ID	<u>Element</u>	Concentration (ppb)	% Recovery
J11VW0	Aluminum	66,000	97.4
•	Iron	66,000	85.9
	Antimony	300	101.4
	Silicon	6,300	100.2

- The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 13. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

jjw/m04-780

5/1/05 Date



Washington Closus	chington Closure Hanford CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST RC-032-034 Page 2 of									of 1				
Collector Coffman			any Contact . Coffman	Telephon 528-64					roiect Coord ESSNER, JH		Price Cade		Data Tu	rnaround
Project Designation 100-F Remaining Sites Buria			ling Location -F-3 Verification					SAF No. RC-032		A	Air Quality		15	DAY
Ice Chest No. AFS-0	4-120	9	Logbook No. L-1174-1		COA RIDSE	38000	_	Method of Shipment Fed Ex						:
Shipped To EBERLINE SERVICES / Li	ONVILLE		e Property No.	4/11/06	A060	0355	•	E	Bill of Lading	/Air Bill No	. SRE	05,	PC	·
POSSIBLE SAMPLE HAZA	ARDS/REMARKS												T	T
NA.			Preservation	None	Cool 4C	Coel 4C	Caol							
Special Handling and/or S	Storene		Type of Container	G/P	aG	aG.	- aG	ì						
Cool 4 degrees C	otorage	•	No. of Container(s)	į.	1	i	1		1	 -	 		 	
<u> </u>			Yolume	250mL	60mL	120mL	125n	mL						
00021	SAMPLE ANAL	YSIS		See item (1) in Special Instructions.	Chromium Hex - 7196	VOA - 8260A (TCL)	Pesticid 808							
<u> </u>														
Sample No.	Matrix *	Sample Date	Sample Time					E.						
J11VW0	SOIL	4/11/04	0815	X	Χ	X	X	(Tagent (Ku train)	A Charles of Man.	F3-6
J11VW1	SOIL		0815	X	X	X	X	<			<u> </u>	 		F3-6D
J11VW2	SOIL		0825	人	X	X	×	<u>(</u>			+	 		F3-7
J11VW3	SOIL		0835	х	X	X	<u>x</u>	^	· ·				 	F3-8
J11VW4	SOIL	4/11/06		Y	×	1 1	X	`		 		 	 	
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Relinquished By/Removed From Landson	PLA Date/Time	Received By/Stor	ed in Da	te/Time										On Oal Are Au DS «Drum Statige DL-«Drum Laqued»
ECAEX Relinquished By/Removed From	Date/Time	Received By/Stor												T=Treeuc Wi=Wipe L=Liquid
Central physical physical profits	DESCRIBE	Received By/Stor	ed In Day	te/Time	Pen	sonnel nut ava inquish sample	ilable to	lo 373	7 X					V=Vegetanou X+Onha
Relinquished By/Removed From	Date/Time	Received By/Stor	ed in Da	te/Time	Ref	r#2 <u>C</u> on <u>4</u>	1121	0	6					
LABORATORY Received By SECTION				Title							 <u></u>	Đ	ate/Fine	
FINAL SAMPLE Disposal Me DISPOSITION	sthod		_	 		Disposo	d By		 	"		E	Date/l'ime	
3111 EE 044 (00 100 100 100 100 100 100 100 100 100											<u> </u>			

Washington Closur	e Hanford		CH	AIN OF CUST	ODY/SA	MPL	E ANALY	(SIS	RE	EQUEST		RC-	032-034	Page 3	of <u>3</u>
Collector Colfman				ey Contact Coffman	Telephone 528-640					lect Coordinator SSNER, JH	Pr	ice Code		Data Tu	ruscound
Project Designation 100-F Remaining Sites Burisl	Grounds - Sail Full Pr	otocoł		eg Location -3 Verification	· .				1	F No. -032	Ai	r Quality		15	DAY
Ice Chest No. AF5-04	(-/20			esbook No. I 174-l		COA R128F	32000		Method of Shipment Fed Ex					·	
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POSSIBLE SAMPLE HAZA	RDS/REMARKS			Preservation	None	Cool 4C	Coel 4C	Cool	4C						
Special Handling and/or S	torage	•		Type of Container	G/P	øG	яG	аC	,						
Cool 4 degrees C			L	No. of Container(s)	1	1	1	-				1			
0			ſ	Volume	250mL	60mL	120mL	125r	ni.						
0022	SAMPLE ANAI	YSIS	······································		Socitom (1) in Special Instructions.	Chromium Hex - 719		Petrick BOA							
Sample No.	Matrix *	Samp	le Date	Sample Time										er in fin	3835
J11VW5	SOIL	4/11	106	0855	X	X	X								F3-10
J11VW6	SOIL	4/1	1/06	0905	X	<u>X</u>	X								F3-59
CHAIN OF POSSESSIO	Dote/Time 1424		gn/Print d By/Store		ite/Time 43	SPI	ECIAL INSTR	UCTIO	SNC						Matrix *
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3778#26 4-12 Refinguished By Bernfled From a FR Streem Stown	-06 1130 OCH Date/Time 413-06 150 c	Receive	d By/Store	d in Da	. //3 (Ne/Time										W = Water O=Oil A=Air DS=Dram Solids DL=Dram Liquids
Relinquished By/Removed From	Date/Time	Receive	d By/Store	dia De	de/Time										Tellisac WeWipe
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LABORATORY Received By SECTION	,			····	Title	l				· · · · · · · · · · · · · · · · · · ·			ì	Date/Time	I
FINAL SAMPLE Disposal Mi DISPOSITION	cthod						Dispos	sed By					-	Date/fine	

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

<u>V</u> ALIDATION LEVEL:	A	В		D	Е
PROJECT: IC	10F 128-	- C -3	DATA PACKAG	E: K03	2 <i> </i>
VALIDATOR:	TCI	LAB: 1(T.	DATE: 6/9	100
			SDG:	1580	
		ANALYSES	PERFORMED		
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MAT	RIX				
JIIVWO	IWWIT	TIIVWZ	JIIYW3:	TIVWY J	TIYWS
11105	JUVWY				
266					"
<u> </u>					
		17,5-11,11			Soil
L					70/1
Technical verificati	on documentation	present?			Yee Ng N/A
	<u>.</u>				
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			LIBRATIONS (Lev	•	Ves. No.
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Calculation check a	acceptable?	***************************************	***************************************		Yes No N/
Comments:					$\overline{}$
		·			

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	_
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No N/A
ICB and CCB results acceptable? (Levels D, E)	
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	
Field blanks analyzed? (Levels C, D, E)	Yes (No)N/A
Field blank results acceptable? (Levels C, D, E)	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	Yes No (1/2)
Comments: Silver - UJ W5	NOFB
4. ACCURACY (Levels C, D, and E)	~
MS/MSD samples analyzed?	(Yes No N/A
MS/MSD results acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No N/A
MS/MSD standards expired? (Levels D, E)	Yes No NA
LCS/BSS samples analyzed?	Yes No N/A
LCS/BSS results acceptable?	Yes No N/A
Standards traceable? (Levels D, E)	Yes No (N/A
Standards expired? (Levels D, E)	Yes No (N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Performance audit sample(s) analyzed?	Yes(Nd) N/A
Performance audit sample results acceptable?	Yes No (N/)
Comments:	hu PAS
Ms-Antinany - 3 all	
Ics - Silican - Jay	

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)	_		
Duplicate RPD values acceptable?	(Yes)	No	N/A
Duplicate results acceptable?	(Ye)	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	(N/A)
MS/MSD standards expired? (Levels D, E)	Yes	No	N/A
Field duplicate RPD values acceptable?	(.Yes)	No	N/A
Field split RPD values acceptable?	Yes	No	(N/A)
Transcription/calculation errors? (Levels D, E)	Yes	No	M
Comments:			
			
6. ICP QUALITY CONTROL (Levels D and E)			^
ICP serial dilution samples analyzed?	Yes	No	N/A
ICP serial dilution %D values acceptable?	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A
Comments:			_
	 		

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)			$\left(\cdot \right)$
Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A
Comments:			\subseteq
			
8. HOLDING TIMES (all levels)			
Samples properly preserved?		No	N/A
Sample holding times acceptable?		No	N/A
Comments:			
			•

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)	\sim
Results reported for all requested analyses?	(Ye) No N/A
Results supported in the raw data? (Levels D, E)	Yes No (N/A)
Samples properly prepared? (Levels D, E)	Yes No WA
Detection limits meet RDL?	Yes (N) N/A
Comments: all selenium ontobles all silven	Yes No (N/A)
Comments: all selenium onto	our Co
3 cadmium over	av
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Appendix 6

Additional Documentation Requested by Client

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/28/06

CLIENT: TNUHANFORD RC-032 K0321

LVL LOT #: 0604L780

REPORTING

DILUTION

WORK	ORDER:	11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
	EXERCRESCIONAL	************			********	
BLANK1	06L0251-MB1	Silver, Total	0.09	MG/KG	0.07	1.0
		Aluminum, Total	2.9 u	MG/KG	2.9	1.0
		Arsenic, Total	0.61 u	MG/KG	0.61	1.0
		Boron, Total	0.24 U	MG/KG	0.24	1.0
		Barium, Total	0.02	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	2.1	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14 u	MG/KG	0.14	1.0
		Chromium, Total	0.14	MG/KG	0.13	1.0
		Copper, Total	0.12 น	ng/kg	0.12	1.0
		Iron, Total	3.5 u	MG/KG	3.5	1.0
		Potassium, Total	5.1	NG/KG	2.3	1.0
•		Magnesium, Total	0.97 u	MG/KG	0.97	1.0
		Manganese, Total	D. D3 u	MG/KG	0.03	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	0.76 u	MG/KG	0.76	1.0
		Nickel, Total	0.24 u	MG/KG	0.24	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.44 ц	MG/KG	D.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	2.3 u	MG/KG	2.3	1.D
	•	Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.49	MG/KG	0.16	1.0
BLANK1	06C0076-NB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

INORGANICS ACCURACY REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0604L780

SAMPLE SITE ID SAMPLE		•	•	SPIKED	INITIAL	SPIKED		DILUTION
-001 J11VWO Silver, Total 5.1 0.23u 5.4 94.4 3.0 Aluminum, Total 7160 5980 216 543.8* 3.0 Armenic, Total 205 2.0 216 93.8 3.0 Boron, Total 110 11.4 108 91.3 3.0 Barium, Total 420 214 216 95.3 3.0 Beryllium, Total 5.8 0.50 5.4 98.1 3.0 Calcium, Total 8400 5840 2700 94.8 3.0 Cadmium, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 5.0 0.25 5.4 97.2 3.0 Cobalt, Total 5.1 23.0 27.0 104.4 3.0 Carmium, Total 5.1 23.0 27.0 104.4 3.0 Copper, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Hercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 386 327 54.1 110.0* 3.0 Mangaesium, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 2660 192 2700 99.1 3.0 Sodium, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 52.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Selenium, Total 102 5	Sample	SITE ID	ANALYTE	SAMPLE	result	INUOMA	*RECOV	FACTOR (SPK)
Aluminum, Total 7160 5980 216 543.8* 3.0 Armenic, Total 205 2.0 216 93.8 3.0 Boron, Total 110 11.4 108 91.3 3.0 Barium, Total 420 214 216 95.3 3.0 Beryllium, Total 5.8 0.50 5.4 98.1 3.0 Calcium, Total 5.5 0.25 5.4 98.1 3.0 Cadmium, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 59.0 7.2 54.1 95.7 3.0 Chromium, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Hercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnasium, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 620 3420 2700 99.1 3.0 Molybdenum, Total 62.5 10.7 54.1 110.0* 3.0 Mickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0	*****	建深着32.5万里里平平平平平	***************			化水类总量	*****	2
Armenic, Total 205 2.0 216 93.8 3.0 Boron, Total 110 11.4 108 91.3 3.0 Barium, Total 420 214 216 95.3 3.0 Beryllium, Total 5.8 0.50 5.4 98.1 3.0 Calcium, Total 8400 5840 2700 94.8 3.0 Cadmium, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 5.5 0.25 5.4 97.2 3.0 Chromium, Total 7.2 54.1 95.7 3.0 Chromium, Total 7.2 21.6 95.8 3.0 Chromium, Total 7.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 62.5 10.7 54.1 95.7 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Antimony, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 198 1.5 u 216 91.8 3.0 Selenium, Total 102 50.8 54.1 95.4 3.0 Selenium, Total 102 50.8 54.1 95.4	-001	J11VW0	Silver, Total	5.1	0.23u	5.4	94.4	3.0
Boron, Total 110 11.4 108 91.3 3.0 Barium, Total 420 214 216 95.3 3.0 Beryllium, Total 5.8 0.50 5.4 98.1 3.0 Calcium, Total 5.8 0.50 5.4 98.1 3.0 Cadmium, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 5.0 7.2 54.1 95.7 3.0 Chromium, Total 74.4 13.7 21.6 95.8 3.0 Chromium, Total 74.4 13.7 21.6 95.8 3.0 Copper, Total 751.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Hercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 3860 327 54.1 110.0* 3.0 Molybdenum, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 62.5 10.7 54.1 95.7 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Antimony, Total 76.6 5.2 54.1 95.0 3.0 Antimony, Total 78.2 1.4 u 54.1 59.5 3.0 Selsnium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 182.1* 3.0 Vanadium, Total 781 584 108 182.1* 3.0			Aluminum, Total	7160	5980	216	543.8*	3.0
Barium, Total 420 214 216 95.3 3.0 Beryllium, Total 5.8 0.50 5.4 98.1 3.0 Calcium, Total 8400 5840 2700 94.8 3.0 Cadmium, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 59.0 7.2 54.1 95.7 3.0 Chromium, Total 24.4 13.7 21.6 95.8 3.0 Copper, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnasium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 781 584 108 192.1* 3.0			Armenic, Total	205	2.0	216	93.8	3.0
Beryllium, Total 5.8 0.50 5.4 98.1 3.0 Calcium, Total 8400 5840 2700 94.8 3.0 Cadmium, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 5.0 7.2 54.1 95.7 3.0 Chromium, Total 34.4 13.7 21.6 95.8 3.0 Copper, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1 3.0 Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 6100 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 102 0.94u 108 94.8 3.0 Sodium, Total 62.5 10.7 54.1 95.7 3.0 Mickel, Total 62.5 10.7 54.1 95.7 3.0 Antimony, Total 56.6 5.2 54.1 95.0 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Vanadium, Total 781 584 108 182.1 3.0 Vanadium, Total 781 584 108 182.1 3.0			Boron, Total	110	11.4	108	91.3	3,0
Calcium, Total 8400 5840 2700 94.8 3.0 Cadmium, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 59.0 7.2 54.1 95.7 3.0 Chromium, Total 24.4 13.7 21.6 95.8 3.0 Copper, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1 3.0 Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3820 1120 2700 92.5 3.0 Manganesium, Total 3820 1120 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 198 1.5 u 216 91.8 3.0 Selenium, Total 1			Barium, Total	420	214	216	95.3	3.0
Cadmium, Total 5.5 0.25 5.4 97.2 3.0 Cobalt, Total 59.0 7.2 54.1 95.7 3.0 Chromium, Total 24.4 13.7 21.6 95.8 3.0 Copper, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Mercury, Total 0.18 0.02u 0.16 105.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 761 584 108 102.1* 3.0 Vanadium, Total 761 584 108 102.1* 3.0 Vanadium, Total 761 584 108 102.1* 3.0			Beryllium, Total	5.8	0.50	5,4	98.1	3.0
Cobalt, Total 59.0 7.2 54.1 95.7 3.0 Chromium, Total 74.4 13.7 21.6 95.8 3.0 Copper, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3820 1120 2700 92.5 3.0 Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 198 1.5 u 216 91.8 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 182.1* 3.0 Vanadium, Total 781 584 108 182.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Calcium, Total	8400	5840	2700	94.8	3.0
Chromium, Total 24.4 13.7 21.6 95.8 3.0 Copper, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1* 3.0 Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3820 1120 2700 92.5 3.0 Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.8 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanedium, Total 102 50.8 54.1 95.4 3.0			Cadmium, Total	5.5	0.25	5.4	97.2	3.0
Copper, Total 51.2 23.0 27.0 104.4 3.0 Iron, Total 19100 18400 108 644.1 3.0 Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 186 327 54.1 110.0 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0		·	Cobalt, Total	59.0	7.2	54.1	95.7	. 3.0
Iron, Total Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 186 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Antimony, Total 32.2 1.4 54.1 59.5 3.0 Selenium, Total 198 1.5 198 1.5 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Chromium, Total	- 34.4	13.7	21.6	95.8	3.0
Mercury, Total 0.18 0.02u 0.16 106.7 1.0 Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 10B 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Copper, Total	51.2	23.0	27.0	104.4	3.0
Potassium, Total 3620 1120 2700 92.5 3.0 Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.940 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 0 54.1 59.5 3.0 Selenium, Total 198 1.5 0 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0		•	Iron, Total	19100	18400	108	644.1*	3.0
Magnesium, Total 6300 3620 2700 99.1 3.0 Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 10B 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Mercury, Total	0.18	0.02u	0.16	106.7	1.0
Manganese, Total 386 327 54.1 110.0* 3.0 Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Potassium, Total	3620	1120	2700	92.5	3.0
Molybdenum, Total 102 0.94u 108 94.8 3.0 Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Magnesium, Total	6300	3620 .	2700	99.1	3.0
Sodium, Total 2660 192 2700 91.5 3.0 Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Manganese, Total	386	327	54.1	110.0*	3.0
Nickel, Total 62.5 10.7 54.1 95.7 3.0 Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0	•		Molybdenum, Total	102	0.94u	108	94.8	3.0
Lead, Total 56.6 5.2 54.1 95.0 3.0 Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Sodium, Total	2660	192	2700	91.5	3.0
Antimony, Total 32.2 1.4 u 54.1 59.5 3.0 Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Nickel, Total	62.5	10.7	54.1	95.7	3.0
Selenium, Total 198 1.5 u 216 91.8 3.0 Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Lead, Total	56.6	5.2	54.1	95.0	3.0
Silicon, Total 781 584 108 192.1* 3.0 Vanadium, Total 102 50.8 54.1 95.4 3.0			Antimony, Total	32.2	1.4 u	54.1	59.5	3.0
Vanadium, Total 102 50.8 54.1 95.4 3.0			Selenium, Total	198	1.5 u	216	91.8	3.0
			Silicon, Total	781	584	108	192.1*	3.0
Zinc, Total 105 59.6 54.1 83.7 3.0			Vanadium, Total	102	50.8	54.1	95.4	3.0
	•		Zinc, Total	105	59.6	54.1	63.7	3.0

INORGANICS PRECISION REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 06041780

			INITIAL			Dilution
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	Factor (REP)
*****	*************************************	本作名名表示文文文文文文本社会会会会会会会会	******	*******	*****	F###############
-001REP	J11VW0	Silver, Total	0.23u	0.23u	NC	3.0
		Aluminum, Total	5980	6920	14.6	3.0
		Arsenic, Total	2.0	2.4	18.2	3.0
		Boron, Total	11.4	13.4	16.1	3.0
	·	Barium, Total	214	239	11.3	3.0
	•	Beryllium, Total	0.50	0.55	8.5	3.0
	•	Calcium, Total	5840	6160	5.2	3.0
		Cadmium, Total	0.25	0.30	18.8	3.0
		Cobalt, Total	7.2	7.6	5.4	3.0
		Chromium, Total	13.7	13.8	0.73	3.0
		Copper, Total	23.0	22.8	0.87	3.0
"		Iron, Total	18400	20200	9.1	3.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Potassium, Total	1120	1160	5.6	3.0
		Magnesium, Total	3620	3770	4.1	3.0
		Manganese, Total	327	356	8.7	3.0
	•	Molybdenum, Total	0.94u	0.95u	NC	3.0
		Sodium, Total	192	314	48.3	3.0
		Nickel, Total	10.7	10.9	1.9	3.0
		Lead, Total	5.2	5.0	3.9	3.0
		Antimony, Total	1.4 u	1.4 u	NC	3.0
		Selenium, Total	1.5 u	1.5 u	NC	3.0
	•	Silicon, Total	5B4	533	9.2	3.0
		Vanadium, Total	80.8	57.0	11.5	3.0
		Zinc, Total	59.6	53.2	11.3	3.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/28/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00

LC81

LVL LOT #: 0604L780

			SPIKED	SPIKED		
SAMPLE	SITE ID	ANALYTE	BAMPLE	THUOMA	UNITS	*RBCOV
******	2000年中央北京市市区2000年中央中央	三年的成立年終年中代日日並出資金出出日 年年年				E-*F==
LC31	06L0251-LC1	Silver, LCS	47.4	50.0	MG/KG	94.8
, ,	•	Aluminum, LCS	473	500	ng/kg	94.5
		Arsenic, LCS	906	1000	ng/kg	90.6
		Boron, LCS	463	500	MG/KG	92.6
		Barium, LCS	479	500	MG/KG	95.8
		Beryllium, LCS	23.6	25.0	MG/KG	95.2
		Calcium, LCS	2410	2500	MG/KG	96.2
		Cadmium, LCS	23.7	25.0	MG/KG	94.8
		Cobalt, LCS	238	250	MG/KG	95.0
		Chromium, LCS	48.1	50.0	MG/KG	96.2
		Copper, LCS	121	125	MG/KG	96.7
		Iron, LCS	482	500	MG/KG	96.4
		Potessium, LCS	2260	2500	MG/KG	90.6
		Magnesium, LCS	2320	2500	MG/KG	92.8
		Manganese, LCS	73.1	75.0	MG/KG	97.5
		Molybdenum, LCS	487	500	MG/KG	97.4
		sodium, LCS	2250	2500	MG/KG	90.1
		Nickel, LCS	191	200	MG/KG	95.7
		Lead, LCS	236	250	MG/KG	94.5
		Antimony, LCS	278	300	MG/KG	92.8
		Selenium, LCS	871	1000	MG/KG	87.1
		Silicon, LCS	216	500	MG/KG	43.1
		Vanadium, LCS	239	250	MG/KG	95.5
		Zine, LCS	93 . 1	100	MG/KG	93.1

Date:

21 June 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Site 128-F-3

Subject: Pesticide - Data Package No. K0321-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0321 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date a	Z Widia z	«Validation»	Date
J11VW0	4/11/06	Soil	С	Pesticides by8081
J11VW1	4/11/06	Soil	С	Pesticides by8081
J11VW2	4/11/06	Soil	С	Pesticides by8081
J11VW3	4/11/06	Soil	С	Pesticides by8081
J11VW4	4/11/06	Soil	С	Pesticides by8081
J11VW5	4/11/06	Soil	С	Pesticides by8081
J11VW6	4/11/06	Soil	С	Pesticides by8081

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

我的一点,这一样,不是这种的情况的,这些最后,是**"这一人的,我们就是这个人的**",这是这个人的一点,这个人不

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike or matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicate samples (J11VW0/J11VW1) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

Completeness

Data Package No. K0321 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

 Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All toxaphene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.
 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

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PCB DATA QUALIFICATION SUMMARY*

SDG: K0321	LE VIEWER	Projects 128:FIG	PAGE_11_OF 11
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS/MSD/LCS analysis

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CL	OSURE	HANFORD		7											
Laboratory: LLI	SDG: K	0321		1											
Sample Number		J11VW0		J11VW1		J11VW2		J11VW3		J11VW4		J11VW5		J11VW	 5
Remarks				Duplicate											
Sample Date		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06	;
Extraction Date		4/25/06		4/25/06		4/25/06		4/25/06		4/25/06		4/25/06		4/25/06	
Analysis Date		5/4/06		5/8/06		5/4/06		5/4/06		5/4/06		5/4/06		5/4/06	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.5	U	1.5	U	1.4	U	1.4	υ	1.5	U	1.5	U	1.	5 U
Gamma-BHC (Lindane)	5	1.5	U	1.5	U	1.4	U	1.4	U	1.5	υ	1.5	U	1.	5 U
Beta-BHC	5	3.3		4.7		1.4	Jυ	1.4	U	0.95		1.5	U	1.	5 U
Heptachlor	5	1.5	U	1.5	U	1.4	U	1.4	U	1.5	U	1.5	C	1.	5 U
Delta-BHC	5	1.5	U	1.5	U	1.4	U	1.4	Ú	1.5	U	1.5	υ		5 U
Aldrin	5	0.56		1.5	υ	1.4	U	1.4	U	1.5	U	1.5	υ	1.	5 U
Heptachlor Epoxide	5	0.41		1.5	U	1.4	U	1.4	U	0.55		1.5		1,	5 U
gamma-Chlordane	5	1.5	U	1.5	U	1.4	U	1.4	Ü	1.5	U	1.5	U	+	5 U
Endosulfan I	5	1.2		1.5	Ü	1.4	U	1.4	Ü	1.5	U	1.5	υ	1.:	5 U
alpha-Chlordane	5	0.89		2.8	<u> </u>	1.4	U	1.4	U	1.5	U	1.5	U	1.	5 U
4,4'-DDE	5	2.3		1.5	U	1.4	U	1.4	U	1.2		1.5	U	3.	1
Dieldrin	5	1.5	U	1.5	U	1.4	U	1.4	U	1.5	U	1.5	U	1.5	5 U
Endrin	5	1.5	Ü	1.5	U	1.4	U	1.4	U	1.5	U	1.5	U		5 U
4,4'-DDD	5	1.5	ح	4.3		1.4	U	1.4	U	1.5	U	1.5	U	1.	5 U
Endosulfan il	5	1.5	υ	1.5	Ü	1.4	U	1.4	Ų	1.5	U	1.5	U	0.8	в
4,4'-DDT	5	1.6		1.5	υ	1.4	U	1.4	U	0.95		1.5	U	0.70	3
Endrin Aldehyde	5	1.5	U	1.5	U	1.4	U	1.4	U	1.5	U	1.5	U	1.5	5 U
Endosulfan sulfate	5	1.3		5.8		1.4	U	1.4	U	0.80		1.5	U	1.5	5 U
Methoxyclor	5	1.5		9.8		1.4	U	1.4	Ű	1.5	U	1.5	U	1.5	5 U
Endrin Ketone	5	0.59	<u> </u>	3.0		1.4	U	1.4	U	1.5	U	1.5	U	1.5	5 U
Toxaphene	5	15	UJ	15	UJ	14	ΟJ	14	UJ	15	ŲĴ	15	ÚJ	1:	5 UJ

Report Date: 05/11/06 15:18

Client: TNUHAMFORD RC-032 K0321 Work Order: 11343606001 Page: 1

	Cust ID:	J11VW0)	J11VW0)	J11VW0		J11VW1		J11VW2		J11VW3	,
Sample	RFW#:	001	L	001 MS	ŀ	001 MSD	•	002		003		004	ļ.
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	4.0	00	4.0	0	4.0	0	4.0	0	4.0	0	4.0	00
	Units:	UG/K	(G	UG/K	CG	UG/K	G.	UG/K	G	UG/K	G	UG/K	KG
Surrogate:	Tetrachloro-m-xylene	108	ŧ	120 *	* *	110	ł	96	*	126 *	*	121 *	* *
	Decachlorobiphenyl	105	*	111	*	106	¥	89	*	110	ક	108	ŧ
	step 1		-fl				,						
Alpha-BHC		1.5	U 	96	*	91	*	1.5	U	1.4	U	1.4	
	Lindane)	1.5	U	101	*	98	*	1.5	U	1.4	U	1.4	
		3.3		98	*	96	*	4.7		1.4	U	1.4	U
Heptachlor_		. 1.5	Ū,	100	*	99	ŧ	1.5	U	1.4	U	1.4	U
Delta-BHC		1.5	Ū	82	*	81	ŧ	1.5	U	1.4	U	1.4	U
Aldrin		0.56	J	80	¥	79	ł	1.5	Ū	1.4	U	1.4	U .
Heptachlor	epoxide	0.41	J	98	*	98	*	1.5	U	1.4	ប	1.4	Ū
_gamma-Chlore	dane	1.5	U	97 .	*	. 96	*	1.5	U	1.4	U	1.4	ט
Endosulfan 1	I	.1.2	J	94	ŧ	, 97	ŧ	1.5	Ü	1.4	U.	1.4	ប
≍alpha-Chlore	Idane	0.89	J	97	*	98	ŧ	2.8		1.4	Ū	1.4	Ū
_4,4,-DDR		. 2.3		. 90	*	94	¥	1.5	U	1.4	Ü	1.4	Ū
_Mieldrin		1.5	U	95	*	97	*	1.5	U.	1.4	Ų	1.4	U
		1.5	U	99	*	100	*	1.5	U .	1.4	U	1.4	Ū
4,4'~DDD		1.5	U	100	*	104.	ક	4.3		1.4	U	1.4	U
Endosulfan 1	11	1.5	Ū	96	*	98	f	1.5	U	1.4	Ū	1.4	U
4,4'-DDT		1.6	J	94	*	103	r	1.5	U	1.4	Ū		Ū
Endrin aldel	hyđe	1.5	U	95	*	99	Ł	1.5	U.	1.4	U	1.4	Ū
Endosulfan :	sulfate	1.3	J	90	¥	93	ł	5.8		1.4	Ü	1.4	Ü
Methoxychlor	r	1.5	ט	108	*	112	*	9.8		1.4	U	1.4	Ū
Endrin keto:	ne	0.59	J	98	¥	99	ŧ	3.0		1.4	Ü	1.4	Ü
Toxaphene		15	マゴ	15	Ū	15	U	15	UJ	14	0T	14	UI

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Pesticide/PCBs by GC, CLP List

RFW Batch Number: 0604L780 Client: TNUHANFORD RC-032 K0321 Work Order: 11343606001 Page: 2

	Cust ID:	J11VW4	L .	J11VW5	i	J11VW6	l.	PBLKGF		PBLKGF BS		
Sample	RFW#:	005	j	006	;	007		.06LE0319-M	B1	06LE0319-N	B 1	
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		
	D.F.:	4.0	00	4.0	0 -	4.0	0	1.0	0	1.0	Q	
	Units:	UG/I	(G	UG/R	G	UG/K	G	UG/K	G	UG/1	G	
Surrogate: Te	etrachloro-m-xylene	103	8	127 *	*	114	*	116	*	114	ł	
	Decachlorobiphenyl	84	₽	103	*	102	ŧ	102	ŧ	98	ŧ	
			=fl==	222555ZZ	mfl==:		≂fl:	BE==##8862==	-f1	_========	=fl=	=======fl
Alpha-BHC	·	1.5	ט	1.5	Ū	1.5	U	0.33	Ū	114	ŧ	
gamma-BHC (Line	dane)	1.5	U	1.5	U	1.5	U	0.33	Ū	111	Ł	
Beta-BHC	·	0.95	Ĵ	1.5	Ū	1.5	Ū	0.33	U	106	Ł	
Heptachlor		1.5	U	1.5	U ·	1.5	U	0.33	Ū	105	ł	
Delta-BHC	·.	1.5	U	1.5	Ū	1.5	U	0.33	U	98	*	
Aldrin	xide	1.5	ט	1.5	U	1.5	U	0.33	U	78	ક	
Heptachlor epor	xide	0.55	J	1.5	U	1.5	Ū	0.33	Ū	105	ક	
gamma-Chlordan	<u> </u>	1.5	U	1.5	Ŭ	1.5	U	0.33	U	104	*	
Endosulfan I		1.5	U	1.5	Ū	1.5	U	0.33	U	106	*	•
alpha-Chlordan	e	1.5	ប	1.5	ָ ט	1.5	U	0.33	U	104	*	
4,4'-DDE		1.2	J	1.5	U	3.1		0.33	U	107	*	
Dieldrin		1.5	U	1.5	U	1.5	U	0.33	Ū	109	*	•
Endrin		1.5	σ	1.5	Ū	1.5	U	0.33	U	111	*	
4,4'-DDD		. 1.5	U	1.5	U	1.5	U	0.33	U	112	¥	•
Endosulfan II_		. 1.5	Ū	1.5	ט	0.88	J	0.33	U	104	*	
4,4'-DDT	·	0.95	J		U	0.76	J	0.33	U	97	ş	
Endrin aldehyde	e	1.5	ប	1.5	U	1.5	U	0.33	Ū	96	¥	
Endosulfan sulf	fate	0.80	J	1.5	U	1.5	U	0.33	U	100	*	
Methoxychlor		1.5	U	1.5	U	1.5	U	0.33	U	100	*	
Endrin ketone_		1.5	ū	1.5	ַ ט	1.5	U_	0.33	· U	101	*	
Toxaphene		15	υJ	15	UJ	15	ַ ט	3.3	U	3.3	U	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Report Date: 05/11/06 15:18

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD RC-032

LVL#: 0604L780

SDG/SAF # K0321/RC-032

W.O. #: 11343-606-001-9999-00 Date Received: 04-14-2006

CHLORINATED PESTICIDES

Seven (7) soil samples were collected on 04-11-2006.

The samples and their associated QC samples were extracted on 04-25-2006; and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 05-04-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A. All soil samples are reported on a dry weight basis unless requested by the client, required by method, or noted otherwise.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

- 1. All required holding times for extraction and analysis have been met.
- 2. The method blank was below the reporting limits for all target compounds.
- 3. Four (4) of twenty-two (22) surrogate recoveries was outside acceptance criteria. However the surrogate recovery acceptance criteria were met (i.e. no more than one outlier per sample).
- 4. All blank spike recoveries were within acceptance criteria.
- 5. All matrix spike recoveries were within acceptance criteria.
- 6. All samples required a instrument dilutions due chromatographic anomalies. The reporting limits were adjusted to reflect the necessary dilution.
- 7. The initial calibrations associated with this data set were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

- 8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

kim\r:\group\data\pest\tnu hanford\0604-780.pst

S/11/06



Washington Closur	e Hanford	CI	IAIN OF CUST	CODY/SA	AMPL	LE ANALY	YSIS	RE	QUEST		RC	-032-034	Page	2 of 1
Collector Coffman			ay Contact Coffman	Telephon 528-64					ect Coordinate SNER, JH	P	rice Code		Data	Turnaround
Profect Designation 100-F Remaining Sites Burial	Grounds - Soil Full Pro		ne Location F-3 Verification					SAF RC-	' No. 032	A	ir Quality		1	5 DAY
ice Chest No. AF5-04	1-120	1	esbook No. -1174-l			E38000			hod of Shipmer ed Ex	st '				
Shipped To EBERLINE SERVICES LIC	NVILLE		Property No.	4/11/06	A06	0355		Billi	of Lading/Air	Bill No	SEE	05,	PC	man na nga ka
POSSIBLE SAMPLE HAZA	RDS/REMARKS		Preservation	Nenc	Caol 4C	1	Cool	4C						
Special Handling and/or S	torage		Type of Container	G/P	яG	åG	≖G							
Cool 4 degrees C	•	,	No. of Container(s)	l '	1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1					}		
. 00	••		Volume	250mL	60mL,	120mL	l2Sr	nL						
016	SAMPLE ANAL	Ysis		See item (1) in Special Instructions.	Chromius Elex - 719		Pesticio 206			•				
Sample No.	Matrix *	Sample Date	Sample Time		13-71 II.									
J11VW0	SOIL	4/11/0/0	0815	X	Χ	IX	\			-				F3-6
J11VW1	SOIL		0815	X	X		/	Λ						F3-6D
J11VW2	SOIL		0825	Χ	χ	X	7							F3-7
J11VW3	SOIL		0835	Х	X	X	X	\overline{C}						F3-8
J11VW4	SOIL	4/11/06	0845	×	〉	X	\ \rac{1}{2}	7						F3-9
CHAIN OF POSSESSIO		Sign/Print				ECIAL INSTR	UCTIO	ONS				<u> </u>	<u></u>	Matrix *
Retinquished By/Removed From RTCoff Retinquished By/Removed From	Date/Time 1446 Me 4/11/06 Date/Time		AC, 3728 41	nte/Time /43 ///06 nte/Time	(I) Ca) ICP Metals - 601 admium, Calcium, (Chromiu	an, Col	ralt, Copper, Iron,	Lead, M.	gnesiun, Man	ganese, Molyb	oderunt_	S=Soit SE=Sadimen SO=Salid
3738#2C 4-12-C	06 1130	Received By/Stor	20 Stan 47206			ickel, Potassium, Se	etermili'	Sucoi	n, Silver, Sodium,	Yanadiu:	n, Zinc); Merc	ury - 7471 - (I	CV)	SI=Studge W = Water O=Oil A=Air
FR (Roundson)	4206 1500	FED E	X											DS=Drum Solins UL=Drum Liquids
Relinquished By/Removed From FCAFX	Date/Time	Received By/Stor	ed in 4/14/0	6 0925										T=Tissue Wi=Wipe L diagnal
Relinquished fly/Removed From	Date/Time	Received By/Stor	<u> </u>	ste/Time		ersonnel not av relinquish sample	es from	3728						V=Vegetation X=Other
Relinquished By/Removed From	Date/Time	Received By/Stor	ed In Di	olc/Time	R	cef#2Con_Y	1/2	106	•			•		
LABORATORY Received By SECTION	,	^		. Tid	e							1	Date/Time	
FINAL SAMPLE Disposal Me DISPOSITION	their				·· ····	Dispos	ed By					·	Date/Time	

Coffmen	Washington Clos	ure Hanford		CHAIN OF CUS	TODY/SA	MPLI	E ANALY	<u>YSIS</u>	R	EQUES	Γ _	RC	-032-034	l'age }	3 of 3	
Project Definition Since Busined Coronate - Scale Full Produced Project Definition (1974 Fundamental Project Definition (1	Collector										nater P	rice Code		Data Tu	rnaround	
Type of Castaliser 1									+-			ir Anality		16	- 00	
Siliped To Charles Services (John VILL) Siliped To Charles Services (John VILL) Office Preservation No. Of Container(s) Type of Container(s) Values Special Handling and/or Storage Cool of degrees C No. of Container(s) Values Sample Date: CHAIN OF POSSESSION CHAIN OF POSSESSION CHAIN OF POSSESSION Sign Trial Names Container(s) CHAIN OF POSSESSION CHAIN OF POSSESSION CHAIN OF POSSESSION Container(s) CHAIN OF POSSESSION Container(s) Chain Name (s) Chain Nam		uial Grounds - Soil Full Pro							R	C-032				1.3	DEG	
Preservation Name Preservation Name Cool & Coul & C	ice Chest No. AF5-C	120		FL-1174-1		RI28E3	32000		М		ment					
Preservation Name Preservation Name Cool & Coul & C				site Property No. 1128F32000 RTC	4/11/00	ADE	60355	<u>-</u>	В	lii of Lading	Air Bill No	SER	051	OC		
Special Handling and/or Storage Cool of Segret C No. of Centainer() Volume 250ml Volume Sample No. Matrix * Sample Date Sample Date Sample Time See Sem (1) a Sample No. Matrix * Sample Date Sample Time Special Handling and/or Storage CHAIN OF POSSESSION Supering Time CHAIN OF POSSESSION Significant Names Relatinguished Byfficancyol From Date Time Application Special Byfficancyol From Date Time See Sem (1) a Supering Time Superi	POSSIBLE SAMPLE HA	ZARDS/REMARKS			1 4		1									
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Sample No. Matrix * Sample Date Sample Time Sample No. Matrix * Sample Date Sample Time Social Matrix * Sample Date Sample Time Social Matrix * Sample Date Sample Time Social Matrix * Sample Date Sample Time CHAIN OF POSSESSION SignIfrial Names Scripting Matrix * Sample Date Sample Time CHAIN OF POSSESSION SignIfrial Names Scripting Matrix * Sample Date Sample Time CHAIN OF POSSESSION SignIfrial Names Scripting Matrix * Sample Date Sample Time CHAIN OF POSSESSION SignIfrial Names Scripting Matrix * Sample Date Sample Time CHAIN OF POSSESSION SignIfrial Names Scripting Matrix * Sample Date Sample Date Sample Time CHAIN OF POSSESSION SignIfrial Names Scripting Matrix * Sample Date Sample Date Sample Time Scripting Matrix * Sample Date Sample Date Sample Time CHAIN OF POSSESSION SignIfrial Names Date Time Supple Matrix * Sample Date Sample Date Sample Date Sample Date Sample Time Scripting Matrix * Sample Date Sampl	C	Stanaga		Type of Container	G/P	#G	aG	#C	3			,				
Sample No. Matrix * Sample Date Sample Time Source Sample Time State Sta	•	r Storage		No. of Container(s)	1	ı	1	1								
Sample No. Matrix * Sample Dato Sample Time JITIWHS SOIL 4/11/06 0855 X X X X X T T T T T T T T T T T T T T				Volume	250mL	60mL	i 20mil	1250	mL							
Sample No. Matrix * Sample Dato Sample Time JITIWHS SOIL 4/11/06 0855 X X X X X T T T T T T T T T T T T T T				_ <u>.k</u>						 		 	 	 	 	
Sample No. Matrix * Sample Dato Sample Time JITIWHS SOIL 4/11/06 0855 X X X X X T T T T T T T T T T T T T T		SAMPLE ANAL	.YSIS													
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SOIL 4/1/06 0855 X X X X X X X X X X X X X X X X X X												<u> </u>	<u> </u>			
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SECTION FINAL SAMPLE Disposel Method Disposed By Date/Tune	Relinquished By/Removed From	Date/Time	Received By/S	Stored In D	Date/Time	Ref	#2Con_4	1121	0	G						
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		l Method	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	Dispos	sed By						Date/Tune		

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	0	D	E
PROJECT:	28-F3		DATA PACKAG	E: Kozz	_1
VALIDATOR:	TLE	LAB: LC	t	DATE: 69	106
DATA PACKAGE COMPLETENESS AND CASE NARRATIVE Technical verification documentation present? PROJECT: \[\frac{2}{3} \cdot \frac{1}{4} \cd					
		ANALYSES I	PERFORMED		
W-846 8081		SW-846 8082			
SAMPLES/MAT	RIX				
JIIVWO	writ	1 JUVU	UZ JUI	IW3	,
Junt L	f Illum				
				S	, id
Technical verificati	on documentation j	oresent?			Yes No N/A
Initial calibrations a	acceptable?ions acceptable?				Yes No N/A
Standards expired?		•••••••••••••••••••••••••••••••••••••••		••••••••	Yes No N/A
	-				1
					Yes No NA
Comments:					

en antinina and a second of the second of

PCB DATA VALIDATION CHECKLIST

Calibration blanks analyzed? (Levels D, E) Calibration blank results acceptable? (Levels D, E) Laboratory blanks analyzed? Laboratory blank results acceptable?	
Laboratory blanks analyzed?	YET NO (N/A
Laboratory blank recults accountable?	Yes No N/A
Laboratory brank results acceptable?	
Field/trip blanks analyzed? (Levels C, D, E)	Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	Yes No (N/A)
Comments:	ho & B
4. ACCURACY (Levels C, D, and E)	
Surrogates analyzed?	
Surrogate recoveries acceptable?	
Surrogates traceable? (Levels D, E)	Yes No N/A
Surrogates expired? (Levels D, E)	Yes No N/A
MS/MSD samples analyzed?	Xes No N/A
MS/MSD results acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No N/A
MS/MSD standards expired? (Levels D, E)	Yes No(N/A
LCS/BSS samples analyzed?	Yes No N/A
LCS/BSS results acceptable?	Yes No N/A
Standards traceable? (Levels D, E)	Yes No N/A
Standards expired? (Levels D, E)	/^
Transcription/calculation errors? (Levels D, E)	Y-2
Performance audit sample(s) analyzed?	Yes No N/A
Performance audit sample results acceptable?	Yes No NVA
Performance audit sample results acceptable? Comments: NO +0×cptex MS MSD/LC	is - Jaly

PCB DATA VALIDATION CHECKLIST

5. PRECI	ISION (Leve	ls C, D, and E)									
Duplicate RPD v	values accepta	able?		***************************************	(Yes)	No N/A					
Duplicate results	s acceptable?	***************************************	***************************************	***************************************	(Yes) N	No N/A					
MS/MSD standa	Yes N	10 (N/A)									
MS/MSD standa	Ouplicate RPD values acceptable? Ouplicate results acceptable? AS/MSD standards NIST traceable? (Levels D, E) AS/MSD standards expired? (Levels D, E) Gield duplicate RPD values acceptable? Gield split RPD values acceptable? Granscription/calculation errors? (Levels D, E) Comments: No dexepter MS/MSD = T all										
Field duplicate F		10 N/A									
Field split RPD	values accept	able?	••••		Yes 1	10 (N/A)					
Transcription/ca	lculation erro	ors? (Levels D, E)		,	Yes N	40 (N),					
Comments:	No.	toxephen	MS/MSD	- Jall							
			ŕ		Yes 1	No N/A					
Positive results r	resolved acce	- ptably?		*************	Yes N	No W/A					
Comments:											
			<u> </u>								
		· · ·									
											
	ING TIMES	-	•		\bigcirc						
					1 1	No N/A					
, –	•				Yes/1	No N/A					
Comments:											

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION	N LIMITS (all		
levels)			
Compound identification acceptable? (Levels D, E)	Yes	No	N/A
Compound quantitation acceptable? (Levels D, E)	Yes,	No	N/A
Results reported for all requested analyses?	(Yes	Νο	N/A
Results supported in the raw data? (Levels D, E)	Yes	No(N/A
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?	Yes(N	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No(N/A
Comments: all toxaphae one			
	1910		-
9. SAMPLE CLEANUP (Levels D and E)			_
Fluoricil ® (or other absorbent) cleanup performed?			
Lot check performed?	Yes	No	N/A
Check recoveries acceptable?	Yes	No	N/A
GPC cleanup performed?			
GPC check performed?	Yes	No	N/A
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?	Yes	No	N/A
GPC calibration check performed?	Yes	No	N/A
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?	Yes	No	N/A
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	NA
Comments:			
** ***********************************			

eration for a construction of the following terms of the first contract of the contract of the contract of the

Date:

21 June 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100-F Remaining Sites Burial Grounds - Soil Full Protocol - Waste

Site 128-F-3

Subject:

Wet Chemistry - Data Package No. K0321-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0321 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

s Sampled Dat			Walidation	Analysis
J11VW0	4/11/06	Soil	С	Chromium VI by 7196A
J11VW1	4/11/06	Soil	С	Chromium VI by 7196A
J11VW2	4/11/06	Soil	С	Chromium VI by 7196A
J11VW3	4/11/06	Soil	C	Chromium VI by 7196A
J11VW4	4/11/06	Soil	C	Chromium VI by 7196A
J11VW5	4/11/06	Soil	С	Chromium VI by 7196A
J11VW6	4/11/06	Soil	С	Chromium VI by 7196A

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI. If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged

"J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in

the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J11VW0/J11VW1) were submitted for analysis. Field duplicates are analyzed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. The chromium VI result in sample J11VWO exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

Completeness

Data package K0321 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The chromium VI result in sample J11VW0 exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0321 PAGE: 1' OF 1	
COMMENTS: No qualifiers assigned.	237

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

,大步,只是一直大手,在一直的人,不是一个大<mark>心,都是这样,就是这样的人,也是</mark>一个大概,我没有一个人,一个一个人。

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHING	TON CLOS	SURE HA	NF	ORD				1							
Lab: LLI	SDG:	K0321						1							
Sample Number		J11VW0		J11VW1		J11VW2		J11VW3		J11VW4	_	J11VW5		J11VW6	3
Remarks				Duplicate	;			T			_	† · · · · ·			
Sample Date		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06		4/11/06	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.5	2.2	Ü	0.23	U	0.22	U	0.21	U	0.22	U	0.22	U	0.23	Ū

INORGANICS DATA SUMMARY REPORT 04/25/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0604L780

SAMPLE	SITE ID	ANALYTE	resula	UNITS	REPORTING LIMIT	DILUTION FACTOR
	成似这种自然是是是是	克勒斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯斯				= W#0#0#W
-001	J11VW0	* Solids	89.8	*	0.01	1.0
		Chromium VI	2.2 u	MG/KG	2.2	10.0
-002	J11VW1	% Solids	88.3	*	0.01	1.0
	•	Chromium VI	0.23 u	MG/KG	0.23	1.0
-003	J11VW2	% Solids	92.1	ŧ	0.01	1.0
		Chromium VI	0,22 u	MG/KG	0.22	1.0
-004	J11VW3	% Solids	93.8	ŧ	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-005	J11VW4	* Solids	91.6	ŧ	0.01	1.0
		Chromium VI	0.22 u	MG/KG	0.22	1.0
-006	J11VW5	% Solids	90.2	4	0.01	1.0
	·	Chromium VI	0.22 u	MG/KG	0.22	1.0
-007	J11VW6	& Solids	87.5	¥	0.01	1.0
	•	Chromium VI	0.23 u	MG/KG	0.23	1.0

Malloc

Laboratory Narrative and Chain-of-Custody Documentation

rangan kalangan berada di kebadan pinanggan penggan penggan penggan penggan penggan berada ang palah banah ban



Analytical Report

Client: TNU-HANFORD RC-032 K0321

W.O.#: 11343-606-001-9999-00 Date Received: 04-14-06

LVL#: 0604L780

INORGANIC NARRATIVE

1. This narrative covers the analyses of 7 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

- 3. Sample holding times as required by the method and/or contract were met.
- 4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. The method blank for Chromium VI was within the method criteria.
- 6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
- 7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
- 8. The replicate analysis for Chromium VI was within the 20% Relative Percent Difference (RPD) control limit.
- 9. Results for solid samples are reported on a dry weight basis.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Pan

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

njp\i04-780

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

Washington Closur	re Hanford	CH	IAIN OF CUST	ODY/S	AMPLI	EANAL	YSIS	R	REQUEST		RC	-032-034	Page 2	of 3 ·
Collector Coffman			ny Contact Coffman	Telephor 528-64					roject Coordi (ESSNER, JH	nator	Price Code		Data Tu	rnaround
Project Designation 100-F Remaining Sites Buria	l Grounds - Soil Full Pro		ng Location F-3 Verification		<u></u>		·	SAF No. RC-032			Air Quality []		15 DAY	
Ice Chest No. AF5 - 04	4-120		ogbook No. 1174-1		COA RIDGES			N	Nethod of Ship Fed Ex	men(· · · · · · · · · · · · · · · · · · ·		
Shipped To EBERLINE SERVICEY/LE	ONVILLE		Property No.	4/11/02	A060	355	·	ا	Bill of Lading	Air Bill I	vo. SEE	OSI	PC	
POSSIBLE SAMPLE HAZA	RDS/REMARKS				Cool 4C	Cool 4C								
NA			Preservation	Nonc	<u> </u>		Cool					<u> </u>		
Special Handling and/or S	Storeura		Type of Container	G/P	aG	aG	aG	3					_	
Cool 4 degrees C	7.01.2gc		No. of Container(s)	1	1	i	1							
1.		,	Volume	250mL	60caL	120mL	1251	mil.						
				See incom (1) in		VOA - 8260A	Pesticio	des	-			<u> </u>	<u> </u>	
00014	SAMPLE ANAL	YSIS	·	Special Instructions.	Hex - 7196	(rcl)	806	12						
Sample No.	Matrix *	Sample Date	Sample Time						3 2007 FOR			17.72.05.12		
J11VW0	SOIL	4/11/0/0	0815	X	Χ	IX	X	7					, M2.;	F3-6
J11VW1	SOIL		0815	X	X	X		X						F3-6D
J11VW2	SOIL		0825	Χ	X	Χ	7	<u>{</u>						F3-7
J11VW3	SOIL	1	0835	Х	X	X	X	7						F3-8
J11VW4	SOIL	4/11/06	0845	Х	\	X		۲						F3-9
CHAIN OF POSSESSIC		Sign/Print			SPE	CIAL INSTR	UCTIO	ON	is					Matrix *
Retinquished By/Removed From RTCo-Fin By/Removed From	Date/Time	Received By/Ston REPORT Reseived By/Ston	X 3728 41	ntc/Time 14: 11/06 ntc/Time	(I) I	nium, Calcium,	Сриония	m,	ist) (Aluminum, A Cobalt, Copper, I licon, Silver, Sodi	ron, Lead,	Magnesium, Mau	gauese, Molybo	lenun,	S=Soil SE=Sulinosu SO=Sulid St=Sludge
3728#2C 4-12- Representation of From Land	JCH Date/Time	Received By/Ston	d la Di	//3 ate/firme	0									W = Water O=Out A=Air DS=Drues Seligis OL=Drues Leganis
Reliaquished By/Removed From	Date/Time	Received By/Ston	:dla , P	te/Time 6 0925	5									T=Tissue WI=Wips L=Liquid
Reimquished By/Removed From	Date/Time	Received By/Sing	d)n D	ate/Time	Per rei	sonnel not av inquish sampl	es trom	ո 3′	728					V=Vegetatuse X=Other
Relinquished By/Removed From	Date/Time	Received By/Ston	id in Di	ate/Time	Re	# 2 Con 4	الما	<u>/ C</u>	26					
LABORATORY Received B	у			Tit	le							D	ate/fime	**************************************
FINAL SAMPLE Disposal M DISPOSITION	etlurd					Dispo	sed By					Ē)ate/) time	

Washington Closu	re Hanford	C	HAIN OF CUST	TODY/S	AMPI	LE ANAL	YSIS	R	EQUEST		RC-032-034	Page 2	of 1 3
Collector Coffman			any Contact . Coffman	Telephor 528-64					oject Coordinator ESSNER, JH	Price Coc	ie	Data Ti	rnarquid
Project Designation 100-F Remaining Sites Bur	ial Grounds - Soil Full Pr		ling Location I-F-3 Verification						NF No. C-032	Air Qua	lity []	15	DAY
Icc Chest No. AF5-0.	4-120		Legbook No. L-1174-1		COA R128	f32000			ethod of Shipment Fed Ex				
Shipped To EBERLINE SERVICES L	(ONVILL)E		e Property No.	4/11/00	AU	060353	<u> </u>	Bi	iil of Lading/Air Bi	il No. 52	EE OSF	٥	<u>-</u>
POSSIBLE SAMPLE HAZ	ARDS/REMARKS]		1		<u> </u>				
NA.			Preservation	None	Cool 40	C Coel 4C	Coal	4C					
Special Handling and/or Storage Type of Container			Type of Container	G/P	aG	aG	a(C	G					
Cool 4 degrees C			No. of Container(s)	1	1	1	1	l.					
-	•		Volume	250mL	60eni.	L 120mL	125	mi.					
000015	sample anai	YSIS	<u> </u>	See item (1) is Special Instructions.	Chromiu Hex - 71		Pestáci 800						
<u></u>]					İ			
Sample No.	Matrix *	Sample Date	· Sample Time									E N	
J11VW5	SOIL	4/11/06	0855	X	X	X	\supset	X					F3-10
J11VW6	SOIL	4/11/04	0905	X	X	X	>	2					F3-57
					 								
CHAIN OF POSSESSI	Date/Time 1424	Sign/Pria) Received By/Sto		ate/Time i49	SI	PECIAL INSTI	UCTIO	ONS					Matrix *
RTCOFFMAN/PICO		100 34		1/11/06	[(1	1) ICP Metals - 60	10 (Clien	nt Lis	t) (Aluminum, Antimor	ıy, Arsenic, Bari	iwn, Beryllium, Bor	ու,	S=Suil SE=Solvman
telinquished By/Removed From	Detc/Tiere	T		ale/Time	, N	ladmium, Calcium, lickel, Potassium, S	Chromiu Selenium.	um, C , Silic	obalt, Copper, Iron, Le con, Silver, Sodium, Va	ad, Magnesium, nadium, Zinc}; l	Manganese, Molyb Mercury - 7471 - (0	denum CV)	SO=Salid SI=Sludge W = Water
Relinquished By/Remoded From	Ucy Date/Time	Received By/Sto	rod la D	ale/Time	_								Q-OJ
FR Hamidson	413-06 1500												DS~Drum Solids DL=Drum Liquids
Relinquished By/Removed From	Date/Time	Received By/Sto	red in 4/14/06	0925	-								T=1;sour Wi=Wipe
				ate/Time		ersonnei not av	ailable 1	10	o.	•			Letiquid V=Vegnation X=Orbox
Relinquished By/Removed From Date/Time Received By/Stored In D				ate/Time	- ;	relinquish samp	es from	572 <u> 0</u> (6				
LABORATORY Received SECTION	Ву			Tit	ie	·	<u></u>			<u> </u>	Ī	Date/Time	1
FINAL SAMPLE Disposal I	Method		·			Disp	sed By			+		Date Time	

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	Α	В	c	D	E
PROJECT: 10	0F 128-	-F~3	DATA PACKAG	E: K032/	
VALIDATOR:	TUE	LAB: LLT		DATE: 6/9/	04
			SDG: K-0	321	
		ANALYSES I	PERFORMED		
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	рН	NO ₃ /NO ₂
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MAT	RIX				
OWVIIT	THUWI	JIIVWZ	Juvus 7	JUVW4 J1	IVWS
JUVWG					
		·			
					50.1
1. DATA PA	ACKAGE COMPL	ETENESS AND C	CASÉ NARRATIV	E	•
Technical verificati	ion documentation p	oresent?			Yes N N/A
Comments:					
			· · · · · · · · · · · · · · · · · · ·		
		 .	·		
2. INSTRUI	MENT PERFORM	IANCE AND CAL	JRRATIONS (Lev	rels D and E)	
					Yes No N/A
•	•				Yes No N/A
ICV and CCV chec	cks performed on al	l instruments?	***************************************		Yes No N/A
ICV and CCV chec	cks acceptable?				Yes No N/A
Standards traceable	∍?	• • • • • • • • • • • • • • • • • • • •	·····		Yes No N/A
•		•			Yes No N/A
					Yes Nd N/A
Comments:		<u></u>			

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No W/A
ICB and CCB results acceptable? (Levels D, E)	Yes No (N/A
Laboratory blanks analyzed?	(Yes) No N/A
Laboratory blank results acceptable?	(Ye) No N/A
Field blanks analyzed? (Levels C, D, E)	Yes No N/A
Field blank results acceptable? (Levels C, D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Comments:	NO FB
4. ACCURACY (Levels C, D, and E)	
Spike samples analyzed?	Yes No N/A
Spike recoveries acceptable?	\times
Sike standards NIST traceable? (Levels D, E)	
Spike standards expired? (Levels D, E)	\ ~~/
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	Yes No N/A
Standards traceable? (Levels D, E)	
Standards expired? (Levels D, E)	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No (V/A)
Performance audit sample(s) analyzed?	Yes (No) N/A
Performance audit sample results acceptable?	Yes No (N/A
Comments:	no PAT

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GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5.	PRECISION (Levels C, D, and E)	\sim	
Duplic	cate RPD values acceptable?		[/A
Duplic	cate results acceptable?		[/A
MS/M	SD standards NIST traceable? (Levels D, E)	Yes No(N	IA)
MS/M	SD standards expired? (Levels D, E)	Yes No (N	7/A)
Field d	duplicate RPD values acceptable?	Yes No N	<u>/</u> A
Field s	split RPD values acceptable?	Yes No N	Žį
Transc	cription/calculation errors? (Levels D, E)	Yes No	[/A
Comm	nents:		
•			
6.	HOLDING TIMES (all levels)	<u> </u>	
Sample	es properly preserved?		J/A
Sample	e holding times acceptable?		Į/A
Comm	nents:		

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)
Results reported for all requested analyses?
Results reported for all requested analyses? Yes No N/A Results supported in the raw data? (Levels D, E). Yes No N/A
Samples properly prepared? (Levels D, E)
Detection limits meet RDL? Yes No N/A
Transcription/calculation errors? (Levels D, E)
Comments: One over

Additional Documentation Requested by Client

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/25/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 06041780

					REPORTING	DILUTION
Sample	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
	20000000000000000000000000000000000000		*****		*========	*****
BLANK10	06LVI028-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

INORGANICS ACCURACY REPORT 04/25/06

CLIENT: TNUHANFORD RC-032 K0321 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0604L780

SAMPLE	SITE ID	ANALYTE	Spiked Sample	INITIAL RESULT	SPIKED AMOUNT	*RECOV	DILUTION FACTOR (SPK)
			********	*****			******
-004	J11VW3	Soluble Chromium VI	4.5	0.21u	4.3	111.6	1.0
		Insoluble Chromium VI	1320	0.21u	1150	114.8	100
BLANKI	0 06LVI028-MB1	Soluble Chromium VI	3.9	0.20u	4.0	98.4	1.0
	•	Insoluble Chromium VI	1130	0.20u	1080	104.0	100

INORGANICS PRECISION REPORT 04/25/06

CLIENT: TNUHANFORD RC-032 K0321

LVL LOT #: 0604L780

WORK ORDER:	11343-606-001-9999-00
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			INITIAL			DILUTION
Sample	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	PACTOR (REP)
*****		当里里斯斯斯斯斯斯斯斯特特特尔英国国家的		*****	*****	****
-004REP	J11VW3	Chromium VI	0.21u	0.21u	NC	1.0